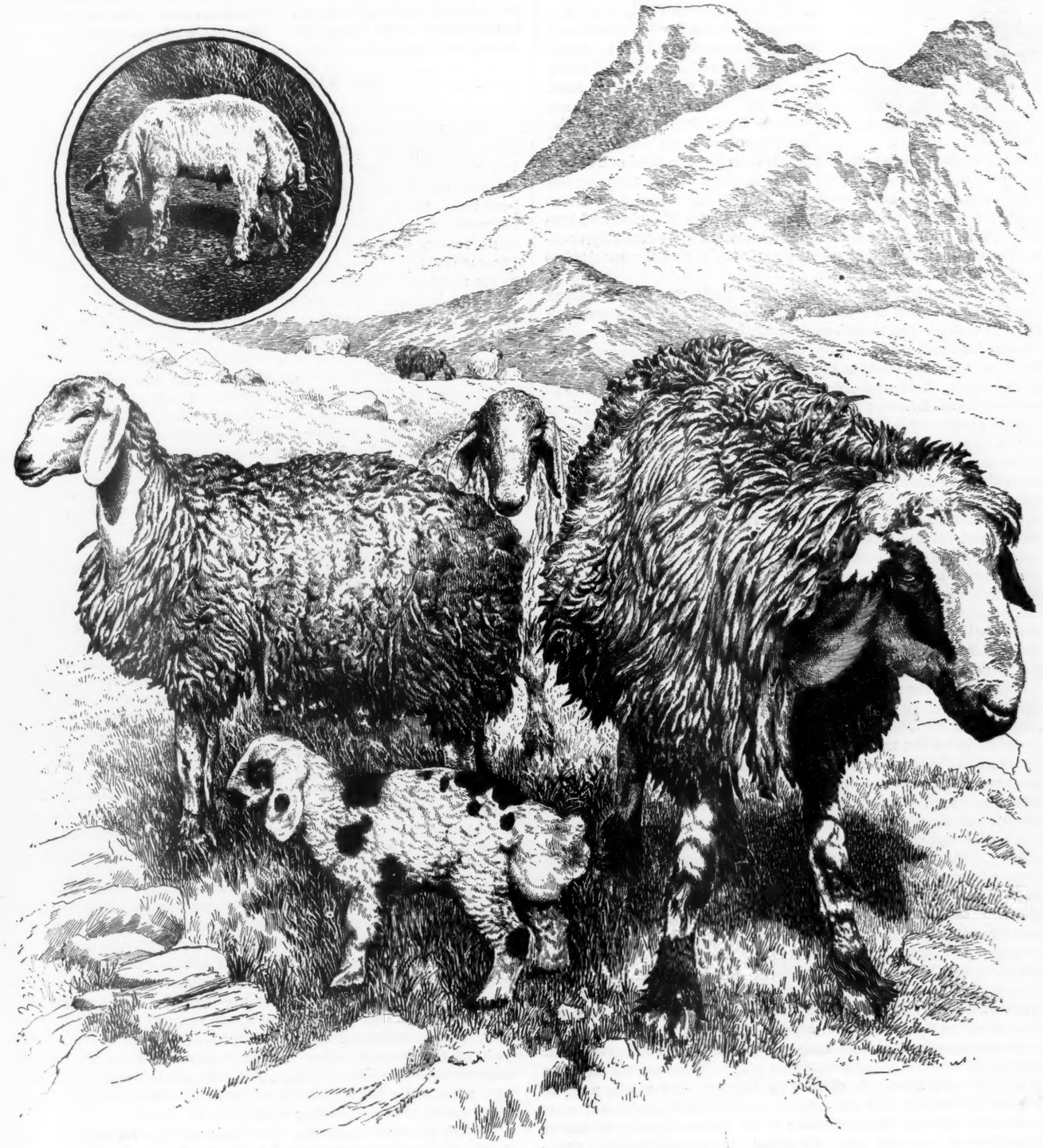
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME LI.—No. 9. NEW YORK, SEPTEMBER, 1892. NEW SERIES—No. 548.



IMPORTED PERSIAN BROAD-TAILED SHEEP.

COPYRIGHT, 1892, BY THE ORANGE JUDD CO.

THE BROAD-TAILED SHEEP OF ASIA.

A. G. ASDIKIAN, U. S. DEPARTMENT OF AGRICULTURE.

MUCH interest has been aroused among sheep-breeders by the recent importation from Persia, of fifteen Broad or Fat-tailed sheep by Hon. Truxton Beale, U. S. Consul General to the Shah's court at Teheran. One hundred and one years ago George Washington was presented with a ram of this valuable breed. G. W. P. Custis used this ram as a part of the basis for his celebrated Arlington Long-wooled flock. From time immemorial Broad-tailed sheep have existed in Southwestern Asia, and to this day it is the only breed of sheep found in the Orient. The Hebrews killed it for sacrifice, and "the fat thereof, the whole rump, taken off hard by the back bone," was burnt upon the altar as the "food of the offering made by fire unto the Lord." The Broad-tailed is the only species of sheep sculptured on the ancient bas-reliefs of Assyria, Babylon and Persia. Almost every nation of the old world as it successively occupied these countries valued these sheep highly, and the species has never given place to any other.

The unusually large caudal appendage is the distinguishing characteristic of the race and being composed of an accumulation of a very delicate fat, is used exclusively in the preparation of many Oriental foods highly praised in prose and poetry. This fat is preferred to butter for cooking purposes, and can be kept longer without rancidity. The part of the tail nearest the hind quarters is much enlarged, its shape being almost orbicular. Beyond this mass of fat the ordinary tail extends several inches. The portion nearest the tail bone contains but little fat, being composed of two strong tissues, upper and lower. The small amount of fat deposited between these two layers is claimed to be the sweetest and most delicate. From the tail bone, downwards, the sides of the tail enlarge until the lower rounded edges attain a thickness of several inches. The bone of the tail extends through the median line dividing it into two equal lobes to where the two cushion-shaped masses leave an open space. This is covered, or filled, by the tail proper which extends down four to five inches, ending in a bunch of short, coarse hair. Some naturalists have claimed that the broad tail has the same functions as the hump of the camel, but the anatomical structure of the fat mass is totally different, having no direct connection with the digestive system.

Aside from the value of this enormous bulk of delicate and palatable fat as human food, it also serves to draw from the flesh all the surplus fat which makes the mutton of some breeds of sheep almost unfit for the table. The fat of the tail is somewhat like lard, but more like butter when properly melted. The tail of a well-bred sheep constitutes not less than one fourth of the dressed weight of the carcass, and, when properly fattened for the butcher, may be one-third of the weight. The lower part of the tail has the most bulk and weight, and gives eighty-five per cent. of pure fat on melting. The upper part has less fat but the whole will average seventy-five per cent. of edible tallow.

The mutton of this breed is claimed by many to be unrivaled by any other, and when "cooked in its own tail," will please the most exacting epicure. It is juicy, sweet-flavored and entirely free from any fatty taste. It has more finely grained muscles in proportion to its weight than any other breed. A flock of good Broad-tails, when ready for the market ought to average ninety pounds to the carcass without the tail. The best Broad-tail sheep for mutton are those found in Kurdistan and around Mt. Ararat. They shear six to seven pounds of coarse, long-stapled wool to the fleece; their color is either dark or light brown or gray. They are the heaviest of all with enormous tails, often weighing forty-five to fifty pounds. It is in this locality that the owners are obliged to put small carts under the tails and harness them to the breast, in order to relieve this ill-fated creature from dragging this incumbrance. Often when the cart is not fixed at the proper time one of the lobes drops off by its own weight. It is not uncommon to see animals with a half of a tail, the other half either dropped off or carried away by wolves, which, like trained epicures know a good thing when they taste it, and if they have access to a piece of the delicious fat of the tail, they do not bother themselves by chewing the flesh and bone.

The Broad-tail sheep of the western and southern provinces of Armenia, especially those of Asia Minor are smaller in size, but finer in fleece. They are either of a uniform pure white or jet black in color. A variety of the black Broad-tail, which is erroneously called the "Astrakan Sheep" is highly valued on account of its soft skin covered with a very fine, short and curly fleece. They are almost exclusively bred by Circassians who use the skin for caps and other wearing apparel. [Through the courtesy of Dr. Wm. Herbert Lowe, Superintendent of the U. S. Quarantine for the port of New York, we present in our frontispiece, portraits of five of the Broad-tailed sheep of the Bayazit breed, imported from Kurdistan, Persia, for trial in the climate of California. A ram and a ewe with her lamb appear in the foreground. The shape of the tail is shown in the upper picture of a recently shorn ram.]

THE MAKING OF COMPOSTS.

S. HENRY.

Recent discoveries in regard to the natural production of available nitrogen in the soil, go to confirm the wisdom of some practices which have been in vogue for centuries, though now nearly obsolete except among the old-fashioned farmers. One of these practices is the making of composts. While no one will underrate the value of commercial fertilizers for the growth of crops, there is no reason why the old methods of providing manure should become obsolete. There is room for every useful practice still, and as the making of manure is one of the indispensable processes of the farm work, it must not be disused because we can purchase more concentrated fertilizers. For if, by mere labor, a large quantity of rich compost may be made without the expenditure of money, all that is thus gained is so much saved.

There is nothing in the best manure that does not exist in the common materials that make composts. Vegetable matter, either fresh or decayed, contains all the elements of yard manure, and it only remains for the farmer to gather whatever he can and decompose the mass. It has long been known that a mixture of vegetable matter with moist earth, and lime, if heaped and exposed to the heat of the summer, becomes exceedingly rich in nitric acid, and this acid combining with the lime, and forming nitrate of lime, years ago, furnished the only source from which the saltpeter (nitrate of potash) for making gunpowder was procured.

In the compost heap, we provide the food for the germs whose purpose in nature, as we have learned quite recently, is to change the ammonia of decaying matters into nitrous acid, and then into nitric acid, which is the special nitrogenous food for plants. And this recent knowledge explains the reason why the composts made by the old farmers were so valuable, and such an economical method of improving the soil. Not understanding this we have, to a large extent, ignored this practice, but now it is necessary to reinstate it as one of the most profitable methods of making manure.

Every plant that grows, contains the gathered elements of the food upon which it has grown. We know that the ashes of trees and plants, for instance, contain most valuable fertilizing properties, and necessarily the tree or plant itself must contain the same elements. And more because something is lost in the burning, and this happens to be the very valuable nitrogenous substances. Thus weeds, decaying wood, leaves, and all such matters, leaf mold, swamp muck, earth from ditches, old barnyards, and from fence rows, all heaped, with a small quantity of stable manure to start the action, and lime to fix the nitric acid produced, will make a richer manure than that which comes from the stables. And just now when the profit of feeding cattle is small, this fact is worthy of the notice of every farmer. Weeds should be cut before the blossom has matured, so as to avoid seeding the ground again, for it is not true as is often thought, that the heat of a manure heap will destroy weed seeds. To make as much manure as possible in this way, it often becomes desirable to add to these heaps, for the enrichment of the compost, other fertilizers purchased for the purpose, such as superphosphate, plaster, and even yard manure. The compost heap is the farmer's savings' bank, in which he may deposit small savings, as well as larger sums.

With good management this work may go on all the winter, for the heat evolved will prevent freezing. The materials are mixed evenly so that they are brought into contact as much as possible, for it is easily understood that each one has its special work to perform. The heap is made flat and broad, so that the air can gain access to it, and furnish the nitrogen that the germs use for their special purpose. It must be kept moist so that the heat will not

kill the useful germs. It is desirable to turn the heap, once at least, to give better opportunity for the work of these little helpers. This is done by beginning at one end of the heap, and turning the outside in, and so going through to the other end. We now know the truth of what was a common adage for years, that large compost heaps are a measure of the farmers crops.

BEET SUGAR IN CALIFORNIA.

RICHARD GIRD, MANAGER OF THE CHINO SUGAR WORKS.

While the sugar business seems to afford a great agricultural and industrial opening in many parts of the country, and will create a diversity of agricultural products, a great desideratum at this time, it should be approached with a great deal of caution and care, and with at least two years' previous experimenting with different kinds of beet seed in the localities where a sugar factory is contemplated. The variety of seed that will do well in one place will not in another, and in some places, where the soil seems to be adapted to sugar-beet culture, none of the varieties will do well, and it will be necessary, therefore, in order to insure success, to go through a course, or series, of experiments, all of which, perhaps, we may already be familiar with, but it is safest to be cautious. Our factory at Chino was not started till after three years of very careful and extensively conducted experiments, therefore, we are meeting with the success that we think we deserve.

The quality of the sugar we produce is superior to that of the imported beet sugar, the latter being raw, and necessitates refining, whereas the product of this factory is a refined article, ready for market, and testing, at an average 99.8 per cent. purity, and passing directly into consumption through the jobbers. The price obtained for our sugar fluctuates with the market, but is, in every respect, equal to the figure at which other refined sugars are selling, It does not vary from the pure crystal known in the market as standard granulated. We have had exceptional yields of thirty-five to forty tons of beets per acre, but fifteen to sixteen tons is a fair average. A production of nine to nine and one-half per cent. of standard granulated sugar to the weight of the beet would be good work in the course of a couple of years. Certain parts of the process are patented, as also are certain parts of the machinery, both American and foreign.

COLD STORAGE BY ARTIFICAL FREEZING.

N. R. BRIGGS, NEW YORK.

An important question now agitating the minds of mechanical experts, farmers, dairymen and fruit shippers is a plan for handling the perishable products of the farm and dairy for market, whether individually or on the co-operative plan, as adopted in some of the large creamery districts, or the forming of companies by the commission men, on the union plan, establishing agencies at railroad centers of the producing districts, with cold storage rooms, and so purchasing the products and shipping as the demand of the market requires. If the commission men and dealers in cities can afford to use cold storage, with greater expenses for rent and labor, it seems reasonable that a combination of producers could afford the same. Not only could higher prices be secured, but there would be no losses by decay when the market is glutted. In the end both consumer and producer would profit.

Machinery for the manufacture of ice and for cold storage is rapidly taking the place of the natural product. The saving in space is an important point, while a decidedly more uniform temperature can be kept by this system of cold storage, than by any other system ever adopted by the use of ice. The cost of an ice or refrigerating plant may seem large, but the great advantage the fruit grower would have in being able to place his fruit in cold storage and hold it until the glut of the market has ceased, would allow him to ship at a profit. The dairyman, instead of being obliged to sell his butter and cheese at a time when the market is low or stagnant, would, if provided with a cold storage plant, be able to hold his products, and reap a good profit.

The total quantity of ice manufactured in New York city, is estimated at 700 tons daily; about 20 per cent. of the consumption. An extra profit is also obtained for this manufactured ice, because the water is thoroughly filtered before being frozen. The fitting up of special freight trains with mechanical plants for cold storage, is now being seriously considered. With this idea in view, a gentleman, who has a large fleet of vessels engaged in the fruit trade in the South, has been in consultation with an expert in refrigerating machinery, who told him that it would be next to impossible to carry out such an undertaking, owing to the absolute necessity of having a continual supply of pure water to cool the gases. The contents of freight cars at their destination, would have to be taken care of at once, as the temperature would rise to the danger point in a few hours, the engine supplying the power for the freezing. A refrigerating plant of fifty tons capacity that cost $45,000 two years ago, can be built to-day for about $25,000. This applies also to small plants now being built of 1000 pounds, and upwards, that were considered too expensive to build as compared with their capacity.

NATIVE FRUITS OF THE NORTHWEST.

J. S. HARRIS, WISCONSIN.

Many wild edible fruits are indigenous to the region generally designated as the Northwest which comprises the states of Wisconsin, Minnesota, North and South Dakota, Montana and Northern Iowa. The common wild fruits in the older Northern States are often found here larger in size and of better quality than farther east. In this region considerable difficulty has attended the growing of the apple and other tree fruits and, as a consequence, attention is beginning to turn towards the cultivation, selection and improvement of some of the wild varieties.

Some native fruits, placed under cultivation, already show a marked improvement in size and quality and there are doubtless varieties among them, which, when given skilful cultivation and scientific propagation, will develop peculiar merits that shall yet cause them to occupy prominent places in the Pomology of North America. It has been demonstrated that there are no domestic varieties of the Almond or Prune family that are sufficiently hardy to withstand the severity of our climate, and we must turn our attention to the native wild species to furnish a substitute.

The native wild plum (*Prunus Americana*) is extensively distributed and the trees are found growing in groves or clumps on the highest hills and in the lowest valleys, about lakes, and streams and the borders of prairies in every locality wherever the annual prairie fires have not destroyed everything of the tree kind. While botanists claim that there is but one species, it appears at some period to have broken into a number of sub-species each having quite distinct varieties. These differ in color from almost white to pink, deep red and purple; in size from scarcely one-half inch to nearly two inches in diameter. Nearly all have, when ripe, a pleasant juicy pulp but with an acrid taste about the skin and seed, that renders them unfit for cooking. But a few varieties have been found, and are being brought to notice, that have a skin rather thin and tasteless which disappears in cooking, and some with a meaty pulp that parts clean from the pit.

The trees of different varieties of wild plums, also exhibit a wide difference in size, habits of growth and foliage. Some varieties grow into trees twenty feet high, others grow spreading, or weeping. Some are mere shrubs or bushes. The trees become smaller as we trace them toward their northerly limits. I am inclined to the opinion that in a past age they were cultivated and thus broken up from one original into many sorts. The De Soto, a variety found on the Mississippi river, in Wisconsin, nearly opposite Lansing, Iowa, was about the first variety brought to notice, and it has since been more extensively propagated and widely disseminated than any other variety. Forest Garden, Weaver, Hawkeye, Wolf and Spur have been on the market for several years.

The Sand cherry (*Prunus pumila*) is very common in the Dakotas and portions of Minnesota. In the more northern regions it fruits very abundantly. The cherries vary in size, are sometimes nearly as large as the smaller plums, and are nearly free from the astringent taste common to wild cherries. If it should prove susceptible to improvement under cultivation it will become a very popular fruit.

The red cherry (*Prunus Pennsylvanica*) is native very far north, bearing an abundance of fruit about the size of red currants and of pleasant acid flavor. These two differ considerably in size, flavor and productiveness, and are hopeful subjects for experiment and improvement.

The choke-cherry (*Prunus Virginiana*) is common over a wide range of country and is an abundant bearer. There appear to be two distinct kinds, one being earlier and the fruit less astringent. I have had sent me for examination, samples with bunches six to seven inches in length. The fruit is meaty, sweet and pleasant to the taste. Samples from another seedling show bunchy short berries seven-sixteenths of an inch in diameter, flavor a little more astringent than the other though very fair for eating from the hand.

The dwarf Juneberry is very common in the far North. It fruits abundantly, producing fruit that is larger than the tall growing kinds, and when ripe is black with a dark bloom, and is juicy, with a sweet, pleasant flavor. The cranberry grows in the swamps of many parts of Wisconsin and Minnesota, and is being cultivated. In some of the marshes there is a white cranberry of large size and less acid flavor. Of grapes, the summer and winter grape are common, but no attempt has been made to bring them into cultivation. Wild strawberries, raspberries, gooseberries, of three kinds, and black currants, are found throughout the whole region, and are abundant in many localities.

APPLES FOR STOCK-FOOD.

Apples are not a strong food for live stock, and the lack of "strength" may be shown by a short table of comparisons. The leading compounds for which a fodder is valued are the albuminoids and carbohydrates. The former contains the substance for the making of the vital juices, muscle, etc., while the latter are to do the work of the animal machines, the fuel for the engine, so to speak. Of these groups of food elements the following familiar food stuffs contain the averages as given after each:

	Albuminoids,	*Carbohydrates,*
Potatoes,	8.54%	84.22%
Turnips,	9.40%	69.54%
Pumpkin,	17.32%	56.02%
Beets (field),	8.90%	45.78%
Apples (fresh),	1.43%	91.51%
Pomace,	4.30%	76.39%

Thus far we have said nothing as to the relative values of the albuminoids and carbohydrates, but when it is understood that the former are the much more important, therefore expensive, it follows that fresh apples are a weak food. The pomace is much better because there has been a condensation of the albuminoids. But as the albuminoids are mostly in the skin and seeds and these are the least digestible, the actual feeding value is not what the table would otherwise represent. Apples are a poor food unless "wormy" and the wish is to destroy these insects by feeding them.

CARE OF FARM HORSES.

WEBB DONNELL.

It is apparent even to an indifferent observer that the general run of farm horses do not have that smooth and well-cared-for look that the majority of the horses of city transportation and car companies possess; though the latter, on an average, do vastly more work in a year than the horses upon the farm. The secret of the matter is in the care and feed. Farm horses receive, as a rule, too little attention as to grooming, and are fed too commonly without regard to a balancing of the ration. Farm horses almost invariably eat too much hay, which distends the stomach when taken in large quantities, prevents that organ from doing its full duty, and makes the horse dull and weak.

Many farmers have no regular ration for their horses, but throw down a forkful of hay almost every time they enter the barn. As a result, many of these horses are eating hay from morning till night, to the manifest disadvantage of the haymow and the manifest disadvantage, also, of the horses, whose bodies become distended, skins dry and coats rough, while the digestive organs are thrown out of gear, so that the animal's whole system becomes impaired. The farmer declares that he cannot afford to feed such a ration as is fed to horses in city stables. Well, the value of the hay that is worse than wasted, when fed in the enormous quantities mentioned, if expended for grain, would make a vast improvement in the condition and appearance of the horses, and would involve no extra expense whatever. This is a point that farmers ought to consider, for on it hinges a horse's measure of efficiency in doing his work well.

A small ration of hay fed with regularity three times a day and a suitable grain ration, carefully incorporated with it, with water twice a day, and a thorough grooming, will make of a spiritless, rough-coated horse with distended body, in four cases out of five, a much more alert, a handsomer and vastly more efficient animal. The grain ration should be of ground or cracked corn, and ground oats or bran, the grain being mixed with the hay so that the hay and grain will have to be eaten together, as it has been found that in this way the grain is much more fully digested. As to the amount of grain that shall help make up a ration, that must depend on circumstances, the ability of the owner to provide the grain, or, perhaps better, his inclination to provide the grain, and also the work which the horse is called upon to do. The thing of chief importance is to get farmers to discard a part of the hay ration and substitute for this discarded hay at least its value in the more condensed nutrition of corn, oats, or bran, the rest will naturally follow. Corn has too much oil to be fed alone.

The same idea holds good in respect to growing colts, with the exception that corn should not be fed them. On hundreds of farms are to be seen dull-eyed, rough-haired, undersized and spiritless colts whose distended bodies during the winter season show plainly that they are the victims of too much hay and too little of the more condensed and nutritious oats and bran. Thousands of colts are annually raised that are not worth even the care and cost of the hay that they consume; but if a colt is worth raising at all it pays to fully develop its possibilities by adequate and nutritious feed. If it does not pay to feed any animal on the farm properly it is pretty certain that it does not pay to keep that animal on the farm at all, and the sooner the farmer recognizes that point the better it will be for his pocket-book.

SECURING THE CORN CROP.

L. D. SNOOK, NEW YORK.

Corn should be cut for fodder as soon as the kernels begin to glaze on most of the larger ears. At this time if no frosts have occurred the leaves are mostly green, and if put in stooks of from thirty-six to forty hills each and well tied at the top, the fodder will cure in good condition. The juices in the stalks will be sufficient to ripen the unmatured ears, so that husking may commence in earnest in about fifteen days.

In dry sunny weather it will pay to leave the corn-fodder spread on the ground for a day or so to dry out and harden, more especially if to put away in large bulk. It will also be found a good plan to sort the corn when husking, removing all silk and husks from the best, while the small ears, and that intended for immediate feeding, may be hauled without this precaution. If the best corn is cribbed without removing the litter it will make a fine nesting place for rats and mice. When husking corn-fodder many persons jerk the husks so spitefully as to remove them entirely, and being loose and short they are not bound in the bundle but left in the field to become weather beaten, dirty and useless as fodder; hence, caution should be exercised on this point. The best ears should be selected for seed. As the stalks contain a vast amount of moisture they should not be placed in large stacks or in close barns until late in the season as they will be quite certain to heat and mildew, unless a layer of dry hay, or straw, be placed between each layer of bundles.

PLOWHANDLE PLODDINGS.

If you expect the land to feed you, the land must be well fed first.

To make the winter dairy profitable, you must begin by filling a good big silo.

It is poor farming to sell the best hay and leave your own stock only the refuse.

Full value can be had from the feeding crops only by feeding them under cover.

It is a hard matter to lose money growing clover, because it has so ma. good uses.

There is no profit in owning a single acre of land more than you can thoroughly cultivate.

Surplus earnings cannot be invested in anything that will pay much better than a good barn.

You cannot afford to buy all your home supplies, no matter how big crops you grow to sell.

Choice fruit is never had from trees that are permitted to bear more than they can properly nourish.

Hogs cannot be fed off too soon after cold weather comes, if you mean to get the maximum profit.

No farmer can afford to buy manure until he has first made use of every pound produced at home.

How can you expect to know whether it pays to feed stock, unless you know the cost of the feed they eat?

If you really want the creamery started, take some interest in it yourself, instead of waiting for your neighbors to do all the work.

You cannot afford to get the impression that you know all about farming; and you cannot afford to farm at all, unless you do know a good deal about it.

RELIEF OBJECTS ON A WESTERN PRAIRIE.

N. A. P. GENTRY, NEW MEXICO.

A ride over the almost trackless wilderness of the dry, uninhabited table lands of the Rocky mountains is full of vastness and monotony. The bracing breezes, the cloudless skies, the undulations of the apparently boundless prairie, the green coating of wild grass, the yellow and blue flowers, and the more majestic ooze and soap-weed blossoms, recur in endless profusion.

The start may be happy, even joyous, the day fine and bright, the breezes cool and bracing, the horses strong, and the provision box not forgotten; yet a half day's travel on a level prairie will make a distant mountain, a cloud in the sky, a bunch of cattle or antelope, or even a stray jack rabbit, a welcome sight. Anything, however trivial, creates a diversion, and is talked of and remembered as a relief object on the featureless prairie. It is a matter of positive relief to the mind to discover, in the distance, some object peculiarly distinct, and when, after hours of continuous travel this object assumes definite shape, speculation is rife as to what it is and whether the road being traveled will lead to it. If so, how far away is it, and will it be reached to-day or to-morrow?

About sixty miles from Albuquerque, New Mexico, a sand stone on the Rio Puerco, is seen, at a distance of thirty miles, across a stretch of prairie. It seems at first to be some ancient ruin. When nearer, the top of the adjoining mountain can be seen, the two presenting the appearance of a huge castle, with battlements and tower, and only within a few miles can a stranger see plainly that it is a rock. Wonder does not cease even upon arrival at the base, for this huge rock is nearly sixty feet high, twelve feet through, and twenty feet across at its widest point. It stands upright on a base of clay no larger than 3x6 feet. The support seems so inadequate to the rock's huge dimensions that I actually feared to stand near it, though it has probably stood for ages, and may, if not molested, stand for ages to come.

SAND STONE—RIO PUERCO. VELVET ROCKS—LA PLATA RIVER.

THE NAVAJO GUIDE ROCK, NEW MEXICO.

Thirty or forty miles to the east is Cabazon, a peak which, from a distance, presents the appearance of a large head, but too high and extensive to present a satisfactory view. Across a stretch of many miles of level prairie is seen the Navajo nuide rock. Beside this strange formation grows a lone cedar, presenting the appearance of an oasis in the desert. A great number of trails center at this landmark, suggesting the idea that this solitary rock is used as a guide by the Navajo Indiags, hence the name.

Near the center of the Navajo Indian reservation, and surrounded by plains for miles in all directions, are the chimney rocks, so named because they appear to be the chimneys, or smoke stacks of some huge factory. When the traveler is distant two or three hours' travel, they assume various shapes, and invite speculation on their formation and age. The Velvet Rocks are huge sandstone boulders, seated in strange array, or, rather, disarray, on top of clay hills, a short distance from the La Plata river. The prairies of the Great Plains east of the Rocky Mountains are now closely settled with thrifty farmers, whose fertile acres are covered with luxuriant crops, and dotted with groves of planted trees, which vary the landscape. As the railway tourist invariably passes through the most disagreeable portion of every country, he will still find some monotony, but the traveler who can afford to drive through any portion of this granary of America will be rewarded with beautiful vistas and ever-changing landscapes. [In the engraving the Rio Puerco sandstone is seen on the left, above is the Navajo Guide Rock, and to the right are the Velvet Rocks.]

PROTECTION FROM UNTIMELY FROSTS.

A very slight frost is often the cause of much loss to the farmer. The warm, growing weather is interrupted by a cold wave which lowers the temperature to very near the freezing point. A calm, cloudless night allows so much heat to escape from the air around the plants that the crops are frozen. If the crops could be protected during this one short freeze, it would be safe to plant them in the earliest warm spring weather, and much profit could be gained during the late warm weather in the fall. The blanketing of cold-frames and of seed beds in the spring, and the covering of flowers in the fall, keeps fixed in the air around the plants nearly all the heat which is constantly leaving the soil by radiation. Clouds form a blanket which keeps the lower air warm in the same way, so that frosts do not occur on cloudy nights. Even slight winds bring warm air.

On the calm, clear mornings of early autumn, the farmers to the west of the Great Lakes, blanket their growing crops with a smudge of dense smoke from burning piles of wet straw, green weeds, and tar. The dense cloud of smoke and water vapor hanging over the crop does not allow the warmth coming from the soil to pass the plants, and hence they are not frozen. The water vapor in the smoke also protects, for it would be frozen first, and in freezing must lose heat which would warm the air, just as tubs of water in a cellar are frozen before the vegetables are injured.

In the harmless white frosts, the water vapor of the air is the only thing frozen. Prof. R. C. Kedzie, of the Michigan Agricultural College, recommends the drenching of gardens and orchards with water on the approach of frost, to fill the air with moisture. The stirring of the moist soil between the rows will make the air damp. A thorough sprinkling may thus save strawberries and grapes in blossom. In the arid regions, a thorough irrigation of the crop may save it from freezing. Gardens may be flooded.

To protect field crops, a smudge of damp materials and tar is the most available. Place piles of straw, hay, and weeds through the field in readiness for the first frost. Watch the cold, clear nights and, if the wind is not blowing at midnight, dampen the piles and kindle enough to make a good smudge. As the coldest time is from two to four in the morning there must then be a good cloud of smoke. Watch for the Government weather signals of frost.

FALL-BLOOMING SHRUBS AND PLANTS.

EBEN E. REXFORD, WISCONSIN.

If I were asked to name the best fall-blooming shrub, I should unhesitatingly say, *Hydrangea paniculata grandiflora*. It is a plant with many merits, and is as hardy as it is possible for a shrub to be. I have never known it to be injured in the least in any of our severe Northern winters. In this respect it is quite equal to the Lilac, which is considered "iron-clad." It is a good grower in ordinary soils. Its foliage is not particularly attractive, but it is clean and never subject to the attack of insects. It blooms at a time when there are few other shrubs to make the garden attractive, and on this account it becomes especially noticeable. Its flowers are not as delicate as those of the Deutzia, nor as bright as those of the Weigelia, but when seen from some little distance, as they should be to secure the best effect, their lack of delicacy is not noticed, and what they lack in color they make up for in quantity. A well-grown bush, with each branch heavily weighted with great clusters of flowers, is a charming sight on any lawn. Any one can grow it, when given a rich soil, and the grass is kept away from it.

Helianthus multiflorus plena is a decided acquisition to our gardens. It has just the bright, rich shade of yellow that we have been wanting so long among fall flowers. Its color is intense in its brilliance. It is like condensed sunshine, and it lights up the garden wonderfully. If given a rich soil, and watered well in a dry time, it begins to bloom during the latter part of summer, and from that time, on to frost, it will not be without scores of large, double blossoms, and hundreds of buds in all stages of development. It branches freely, and sends up a large number of shoots from the root, so that a plant, properly treated, becomes a compact mass of stalks and branches, well covered with foliage and flowers. It is excellent for cutting, as its flowers last for a long time, and because of their rich color they are most effective in lighting up a room. Used with rich scarlets, dark maroons and dull reds they are exceedingly satisfactory. One of the prettiest rooms I saw last year was decorated with American Ivy after it had put on its fall livery of scarlet and maroon, with here and there flecks of its original green still showing through the more vivid colors, and large branches of this sunflower.

The Cactus and single Dahlias are among our most effective fall flowers. Placed behind a clump of the Helianthus, mentioned above, they display their rich colors most brilliantly. One of the finest displays of this flower I have ever seen was on a neighbor's lawn. He planted about a dozen roots in a circular bed which was made very rich, and was kept well watered. The plants grew wonderfully, and crowded each other so that those on the outside were forced to bend earthward. The result was a rounded, compact mass of branches with the lower ones touching the grass. When covered with hundreds of single and semi-double flowers, thrown well above the foliage, the effect was charming beyond all description. It was like one large plant. Great quantities were cut daily, but none of them were missed. For cutting this is one of the very best flowers we have. The flowers remain fresh a long time after cutting, and as they have long stems on which they set gracefully, they can be arranged very effectively in tall vases. Cut with shorter stems, and used in considerable quantities, the semi-double kinds are fine for rose-bowls. These Dahlias deserve a place in every garden.

Cosmos is a charming flower, but, unfortunately, it is very late in coming into bloom, and frost is pretty sure to cut it down before it has had a chance to show what it can do in the way of making the garden beautiful. It should be started as early as possible and planted in a soil that will hasten it along to maturity, but do not make it a rich soil if you want the plant to do well. I have never known a plant of it to do well in a soil that was heavily manured. Well-grown plants reach a height of five and six feet, and are therefore effective if planted in large clumps. In seasons that are long enough to allow it to come to maturity, it is a grand plant, with its hundreds of dainty, dancing blossoms hovering like butterflies over its finely-cut foliage. For cutting it is most desirable.

Fitting a Horse Collar.—How to properly adjust the collar of a horse is a knowledge that all men do not possess, and many disagree on important matters. Some men keep the inner surface of the collar soft and pliable. Every time the collar is put on it is pressed and pummeled until it is soft. Others, equally as good farmers, never soften the wearing surface of the horse's collar, but simply rub off the accumulated hair and dandruff. The latter plan is most practiced. The wearing surfaces of ox yokes are as hard as seasoned wood can make them. In purchasing a horse collar take the animal with you and have the collar fitted. A short collar will choke the animal and cause distress. If a trifle too long it will do no harm if raised up at the bottom by putting a pad under at the top. The hames should always be buckled close and fitted snugly to the collar. Using the collar on other horses ruins the fit.

PROPER CARE OF CARRIAGES.

S. YATES.

Attention to little details in the care of a carriage will much prolong its days of usefulness. The wearing portions of the axles should be well and frequently oiled. In a new wagon the axles should be oiled after every twenty-mile run. Wipe off the skeins with a woolen cloth, also remove all oil and dirt from each end of the hub. For light vehicles, use castor oil. For heavy wagons, the prepared axle grease is far superior to soft grease. Never allow a wagon to be used until so dry that it creaks, as the vehicle then needs increased power to move it, and there is damage to the axle and hub in the rapid wear.

In all light wagons use leather washers to take up the wear on the ends of the hubs. If the fifth wheel has been properly constructed, no oil will be needed on it. The thill coupling should be kept in good repair and close fitting. All bolts should be kept in place, and rattling of any portion thereby avoided. Do not allow mud to remain long on the painted surface. A few pails of water dashed on the wagon, when the mud is damp, will usually rinse off most of the dirt, and by the use of the small hand spraying pump it can be left in a presentable condition with but little or no use of the sponge. If mud is allowed to dry on the carriage, it soon deadens the luster of the varnish and renders the paint less durable.

If possible, all wagons should stand upon an earth surface when not in use. The moisture in the soil prevents shrinkage of the woodwork of the wheel, and the tire is thus kept close fitting for a longer time than when standing upon a wooden floor. Paint first wears off from the side of the felloes, and on wagons much used this portion should be painted or oiled at least every spring.

CREAMERIES IN THE SOUTH.

The development of the great resources for dairy enterprise in the South, deserves careful attention, for one reason, among others, that the mild winters afford the best opportunities for butter and cheese making when all the Northern dairies are in enforced idleness, or working under disadvantages on account of the cold weather. There are creameries now at work in Tennessee, Mississippi, Louisiana, South Carolina and North Carolina, and there is no good reason why this should not be the case even in Florida. Butter made in the winter might be shipped to Northern markets, and to foreign countries where the prices paid are enormous. This foreign business is now in the hands of the Danes, and French, and those countries do not possess the conveniences that are found in the Southern States. The feeding is so cheap that butter may be made for ten cents a pound, and the profit from the manure that would be made, and which is so much needed, would easily be equal to half as much. The conditions of the season are reversed in the South, for the mild winter affords equal advantages for butter making that are enjoyed in the summers of the North, with a large preponderance in favor of the South. Dairying would cheapen the cotton product, for it would fit the soil well for this crop, and would supply the best manure for it. In the Southern mountains the business may be carried on every day in the year, and the fine grasses there grown, with the cheap pasture in the cool summers in the shady woods, where a variety of grasses and edible weeds, and the numerous cool springs, afford the finest facilities for summer dairying in the whole country. Butter of the finest quality may be there made for less cost than elsewhere in the world.

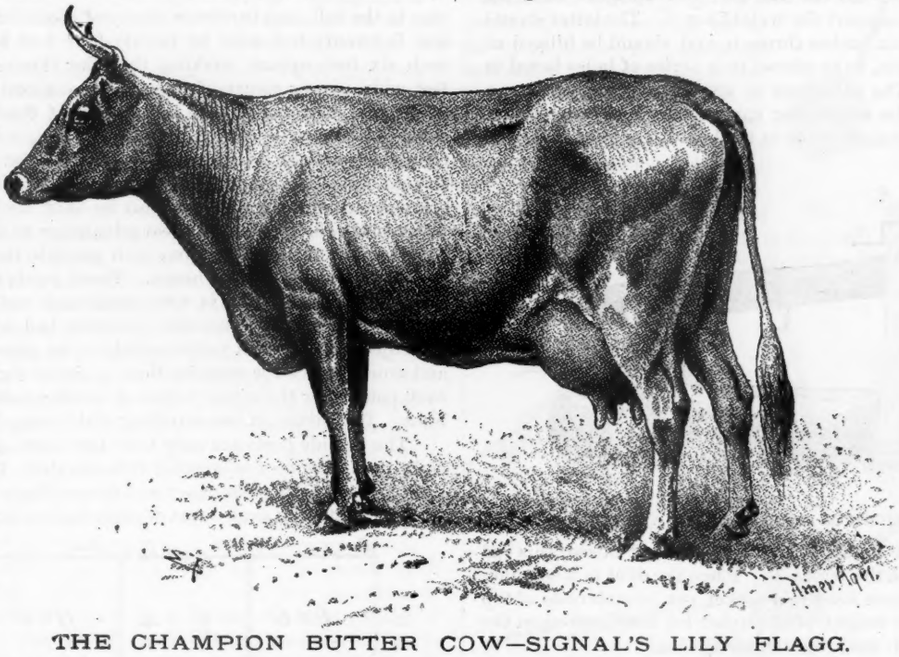
Cleanliness in Milking.—Men often go directly from the dirtiest operation of farming to the milking, not washing their hands, brushing their garments, nor properly cleaning the cow's udder, and, to cap the climax, many moisten their hands and the teats with milk. Brushing the dry udder with the flat of the hand will remove much dirt. Filth should be washed off with clean water. Both teats and hands should be clean and dry during milking. The strainer will not remove all impurities. Many are dissolved, and thus get into the butter and cheese.

SIGNAL'S LILY FLAGG 31035.—THE CHAMPION JERSEY.

L. S. HARDIN.

In the light of every day experiences on the farm and in the dairy it is marvellous that a little cow weighing only 950 pounds should produce 1,047 pounds three-fourths ounces of butter in one year, but here we have the best possible evidence that it has been done. It is very hard for a man, whose cows scarcely produce two hundred pounds of butter yearly to believe that a single cow can produce the yield of five such cows. But when we know how these big records have been reached, step by step, first one cow, and then another raising the figures, we are convinced of the possibilities of such performances with careful breeding and feeding.

The contest among the Jerseys has happily been for a champion prize cup that is passed along from one record breaker to another. This cup was introduced by E. F. Appleton at the time he took the record of 936 pounds fourteen and three-fourths ounces from Landseer's Fancy with Eurotisama's 945 pounds nine ounces. Then it was won by Bisson's Belle with 1,028 pounds fifteen and five-eighths ounces and now Signal's Lily Flagg has the cup, with the record of 1,047 pounds three-fourths ounces. The popularity of these contests is shown in the following invitation: "The citizens of Huntsville, Alabama, request the pleasure of your presence at a reception to be given at the Monte Sano Hotel, on Wednesday, June 29th, at half-past eight o'clock in honor of Gen. S. H. Moore; W. E. Matthews, Esq.; Captain Milton Humes and Mr. L. C. Goodell." These were the gentlemen who owned the cow and conducted the test. At this reception and feast the Champion Cup was presented and the whole city of Huntsville paid honors to the little cow that won the prize. The test began June 1, 1891, at which time her highest daily yield of milk was fifty pounds four ounces, containing four pounds six ounces of butter. In July she fell off slightly, the highest daily yield in that month being thirty-seven pounds eleven ounces milk, containing four pounds two ounces butter. In August, September and October, she about held her own. In November she fell off with her highest yield of milk at twenty-five pounds six ounces and a best butter yield of two pounds fifteen and one-half ounces a day. On December 8th the record stopped and a bull calf was dropped. At that time she was giving twelve pounds eleven ounces milk and making twelve ounces of butter a day. On the fifth of January the record again began with twenty-eight pounds nine ounces milk and two pounds twelve ounces butter daily. This was about her normal yield through that month and February. In March she slightly increased the yield, the highest day's work in milk was forty-one pounds ten ounces, containing three pounds twelve ounces of butter. In April her best daily record ran up to thirty-nine pounds twelve ounces of milk and three pounds fifteen ounces of butter. In May, the last month of the test, her highest day's work in milk was thirty-four pounds six ounces, and in butter four pounds ten and three-fourths ounces. In these citations the highest milk and butter records for the month rarely occurred on the same day.



THE CHAMPION BUTTER COW—SIGNAL'S LILY FLAGG.

Up to May 24th the test had been what is called "private," that is, it was not conducted under the management of the American Jersey Cattle Club, though it was well known throughout the country that the test was going on, and all were invited to inspect the management. During the last week of the year an official tester of the club, the well known Valancey E. Fuller, who owned Mary Anne of St. Lambert, presided with several other well known dairy authorities, and, either under better advice or conscious of the importance of the occasion, Signal's Lily Flagg surpassed all her previous work. The sum of the year's work was milk 10,954.03 pounds and butter 1,047.04 pounds. The official test began May 24th and continued seven days; the record being twenty-seven pounds three and one-half ounces of butter from 189 pounds seven ounces milk, or less than seven pounds of milk to one pound of butter.

The following is the feeding of Signal's Lily Flagg for the full year. She began with a ration of two gallons corn meal, three gallons wheat bran, one gallon ground oats, three quarts oil meal and two gallons silage, given daily in two feeds. Gradually this ration was increased until she took four gallons corn meal, four gallons ground oats, two gallons wheat bran, one and one-half gallons oil meal and about fifty pounds of clover hay. As her time for calving approached the feed was reduced, and on December 30th she had only four gallons of bran. After calving the grain was gradually restored to the full ration and kept up until the last week when, under the advice of Mr. Fuller, two quarts of oil meal were added. During the whole year the cow received precisely the same treatment as that given the general herd. She ran on a rather poor pasture and took the rain and wind with the other cows.

Signal's Lily Flagg was bred in Kentucky and while strictly thoroughbred and a registered cow she does not belong to any of the fashionable families as the first part of her name would imply, as she is only one-twelfth Signal blood. The credit of her work belongs to the breed, and as Bisson's Belle was of the same class this should greatly encourage testing the best cows to find the wonders. She was eight years old at the time of this test and weighed about 950 pounds. While perhaps not a model cow in appearance, yet she is of good form and, what is much better, of strong constitution and she looks well enough to go through another year's trial. She has two tested daughters, one of fourteen pounds a week and another of twenty pounds, thus showing that she possesses that greatest of all thoroughbred gifts the power of transmitting her good qualities to her offspring, and as she has dropped eight calves (one pair of twins) the world is likely to be greatly benefited by the good work of Signal's Lily Flagg.

CHURNING BY MACHINERY.

Where the churning of the cream is done by hand it entails a most arduous task upon some member of the farm household, and in many cases it falls to the lot of the housewife. During the summer, where from three to five cows are kept, there is half an hour of this heavy work every day. There is often a large dog watching the operation of churning that he may obtain his usual fill of buttermilk. A treadmill can be obtained for a few dollars, and the dog made to do the work, and you may watch the operation or devote your time to other household duties. With the improved, or even the common powers, a dog, weighing fifty pounds, can do the churning of the cream from five cows, and not injure himself. Such work in hot weather should be done early in the morning while it is cool. The butter churned then will be firmer. If the dog is treated kindly, and petted, he will gladly do the work and be ready at the call, or appear as soon as preparations are observed for the operation. Calves, sheep, and goats are often used in treadmills, but the dog is the most cleanly and is best adapted to the work. Human life is too short to spend much of it manipulating the churn dasher, especially when other power is so plentiful. An attachment can be placed on the windmill, but calms interfere.

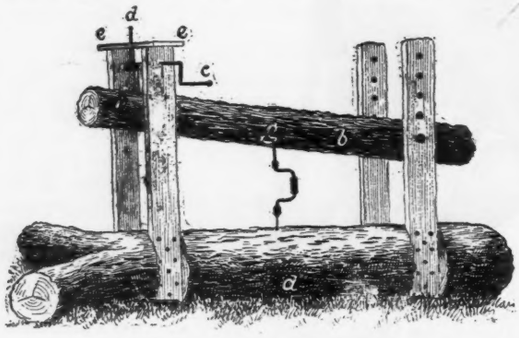
PROGRESS IN THE RAMIE INDUSTRY.

At the California State Flower Show, just held at San Francisco in the Mechanics Fair building, a special exhibit of the ramie plant, fiber, and goods manufactured from it was made by Mr. W. H. Murray, State Superintendent of Ramie Culture for California. The goods were made by a new process by which the fiber can easily be degummed and worked into cloth. The illustration herewith shows a ramie flower in full bloom. The leaves are of a whitish blue color, the seeds are almost as fine as dust, and have to be germinated under glass. Several years are required to obtain mature roots from the seed suitable for propagation and to set out a plantation of ramie.

RAMIE FLOWER.

A RUSTIC DRILL FOR IRON.

With proper tools, broken farm implements can often be repaired at home in much shorter time than would be needed for a journey to the blacksmith. The illustration herewith, a sketch of which was sent us by John C. Umsted, Kansas, shows an ingenious contrivance for rapidly drilling iron. A heavy log, *a*, forms the base, and if forked is still less liable to turn. It is also better if it bows up slightly at the middle. To the base log, four uprights, each six feet long, are nailed, to support the weight log, *b*. The latter should be eight feet long and six inches through, and should be hinged at one end by a movable pin, to be placed in a series of holes bored in one pair of uprights. The other end is attached by a rope, *h*, to a windlass, *c*, by which the weight log can be raised or lowered. A brake rod, *d*, passes through a hole in the board, *e*, nailed on top of

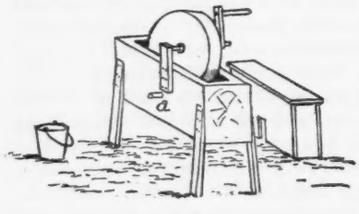


DEVICE FOR DRILLING IRON.

the uprights, and when the upper log is to be kept raised, this rod is pushed into a hole in the windlass. Place the drill in a common brace, and insert the brace head in a socket cut in underside of top log. When in use, the weight of the upper log must rest upon the drill. For boring wood, use a lighter weight log.

A CHEAP AND DURABLE GRINDSTONE FRAME.

One great cause of trouble with grindstones is fitting them to rickety frames, and placing them out of doors uncovered, and with water in the trough. The portion of the stone standing in the water becomes soft and is easily worn away, while that exposed to the sun's rays is continually hardened, and soon wears out of a true circle, upon which no tool can be properly ground. The frame shown in the illustration consists of a well-seasoned piece of timber, about one foot square and three feet or more in length, with a trough cut in the top eight or ten inches deep, and thoroughly coated with hot oil, or even with kerosene, several times before it is used. The legs are made from three by four-inch scantling, beveled at the top end and firmly nailed on, as shown in the engraving. The shaft may be supported by wooden boxes attached, or friction wheels that often come with the stone. Make a good, solid cover, and keep it on the stone when not in use. At *a* is a hole, with a plug, which is drawn to let off the water each time after using. If the bottom of the legs rests upon brick or stone, the whole apparatus may be left out of doors the year round.



A HOMEMADE GRINDSTONE FRAME.

A SUBSTANTIAL HOUSE FOR SWINE.

A. H. SHELDON, IOWA.

As many farmers have requested a description of my hog-house, will answer the request through the AMERICAN AGRICULTURIST. The house is built for eight brood sows in the spring, or fifty

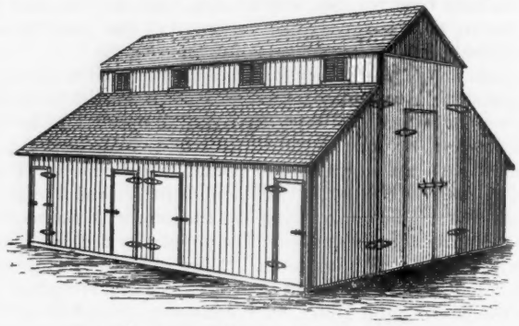


FIG. 1. PERSPECTIVE VIEW OF PIGGERY.

pigs in the fall, and furnishes plenty of room for this number. The size is twenty feet wide by twenty-four feet long. The pens are each six feet square, making the alley through the center eight feet wide, giving plenty of room to drive a load of corn under cover of the roof, to unload in the fall. Four of these pens are on each side, and one swill trough, eight feet long, answers for two pens. Over each trough is placed a swinging door three by eight feet so that any litter which may be rooted into them can be easily cleaned out, and the pigs can also be shut back until the swill is poured into the troughs, a great advantage as any feeder knows.

There are little doors from each pen into the alley, also into the yards on the sides of the house. These yards should have a board floor, unless the ground is very sandy and well drained. A small pen near a hog-house becomes a mortar bed, after every rain, and the object of the small yards outside is to give early pigs sunshine and more chance for exercise than a six by six pen affords. Over each pen under the upper roof is a small window to admit air and light. This slides on the scantling which supports the lower roof.

The outside posts are only four feet high, and the center posts eight feet. The roof is boarded and shingled. The house is inclosed with No. 4 boards, then paper and drop-siding are put on to keep out frost in winter. Large doors at each end can be opened when occa-

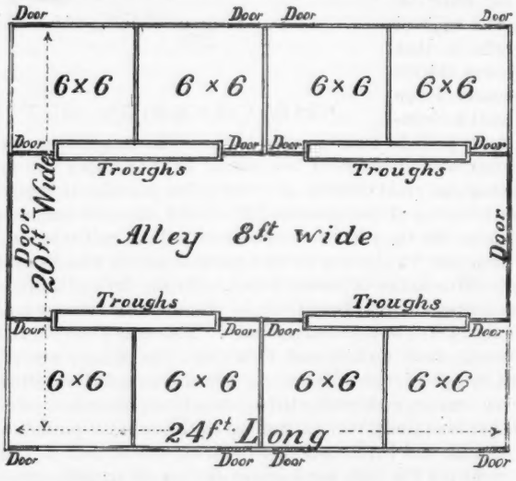


FIG. 2. GROUND PLAN OF PIGGERY.

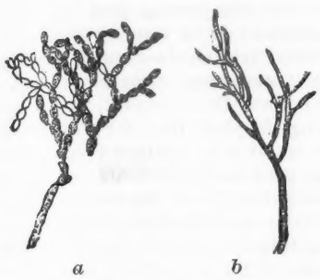
sion requires, but for every day use a small door, thirty by seventy-eight inches, is placed at either end. A well and pump should be placed where most convenient so that no delay will occur when feeding time comes. There is but little trouble to provide places for grain and meal, but a bountiful supply of water is quite as important and often neglected. The cost of the house with lumber at twenty dollars per thousand, and shingles at three and one-half dollars is about one hundred dollars. Several loads of sand or gravel may be profitably dumped into the pigyards each year.

THE PEACH, PLUM, AND CHERRY ROT.

CLARENCE M. WEED, NEW HAMPSHIRE AGRICULTURAL COLLEGE.

The ravages of the fungus disease known as the brown rot of stone fruits is but too familiar to growers of plums, peaches, or cherries. It is one of the most destructive fruit diseases, and attacks not only the fruit itself, but also the twigs, leaves and blossoms. It is occasionally found upon the apple and pear, but rarely does any serious damage to them.

Life-History.—Starting with its attacks upon the fruit, the annual cycle of this fungus may be briefly described as follows: A



a *b*

FIG. 1. SPORES AND MYCELIUM OF FRUIT ROT.

FIG. 2. GERMINATING SPORES OF FRUIT ROT MAGNIFIED.

minute spore (Fig. 1, *a*) falls upon a green plum, on which there is a little water left by rain or dew, and soon sends out a minute germinating tube (Fig. 2) which penetrates the skin of the fruit. Once inside, it grows rapidly, pushing its branches through the pulp in all directions, forming a dense network of mycelium, (Fig. 1, *b*) which absorbs the contents of the cells, disorganizing the tissues and causing the so-called rot. The affected plum at first turns brown in one or two spots, which gradually enlarge until, finally, the whole plum becomes brown and rotten. Soon after it has reached this stage it becomes covered with a brownish or ash-colored velvety coating, which consists of vast numbers of minute spores produced by the mycelium of the fungus. If one of these masses be shaken over a glass slide, and the slide then put under the microscope, it will be seen that many of the spores have separated.

The spores are blown about by the wind, and when one of them lodges on an unaffected plum, where sufficient moisture is present, it starts the disease again. The rotten plums continue hanging upon the trees, gradually shriveling up (Fig. 3), until finally they become dry mummied husks, roughened by ridges of the skin, and in this state they remain on the trees through the winter (Fig. 5). On many of these mummied plums these spores will adhere even until the following spring, when apparently they have the power of germinating; and in all, or nearly all of them, the mycelium remains in a dormant condition, so that, during the warm, damp weather of early spring, this mycelium is able to produce a new crop of spores. Then spores are scattered everywhere by the winds.

Damage to the Blossoms.—It frequently happens that the spring crop of spores developing from the mummied fruits attack the blossoms, and occasion very serious losses. This is particularly

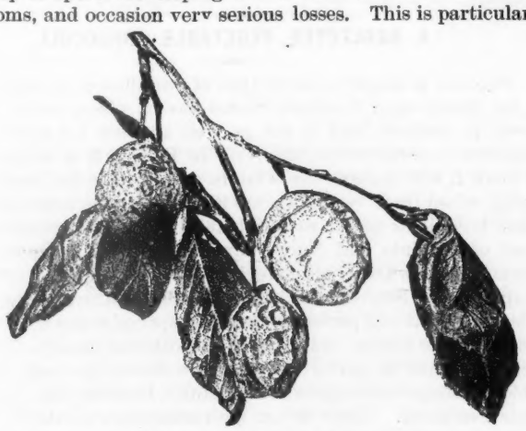


FIG. 3. ROTTING PLUMS.

true of the peach. A few years ago the peach crop in some of the Atlantic States was greatly damaged from this "peach blight."

Injury to Cherries and Peaches.—Cherries and peaches are attacked much like the plum. Dr. Erwin F. Smith, who has made a special study of peach enemies, states that this fungus is more common and far more destructive than any other observed on the peach in this country. It is rarely absent from the orchard, and in rainy weather it frequently destroys from one-half to three-fourths of the crop; in some cases the entire crop. Under its influence the fruit quickly loses its normal color and flavor, and becomes an entire loss to the grower. As the fungus invades the healthy tissues of the fruit, the latter becomes leather-colored, or dark brown, and the peach is said to rot. If some of the velvety "down" from the diseased plums, or peaches, be placed under a compound microscope it will be seen that the spores are developed in branching threads, as seen in Fig. 1. A diseased cherry is shown in Fig. 4.

Remedies.—The brown rot of stone fruits is a difficult pest to eradicate. Its spores are produced in vast numbers, and scatter readily. The first essential to a successful fight with it is to pick off and burn as early in winter as possible all mummied fruits hanging on the trees; and the spraying should be supplemented by frequent inspection of the orchard, and the removal and burning of all rotting fruits. The most successful results, so far obtained, in spraying for this disease have followed the use of the dilute Bordeaux mixture of lime and sulphate of copper and of the ammoniacal solution of carbonate of copper. Spray before the blossoms open. As soon as the fruit is well formed, spray again, and repeat the application twice later at intervals of two weeks. If the Bordeaux mixture is used, London purple may be added to destroy the plum curculio at the same time. If the flowers

FIG. 4. DISEASED CHERRY.

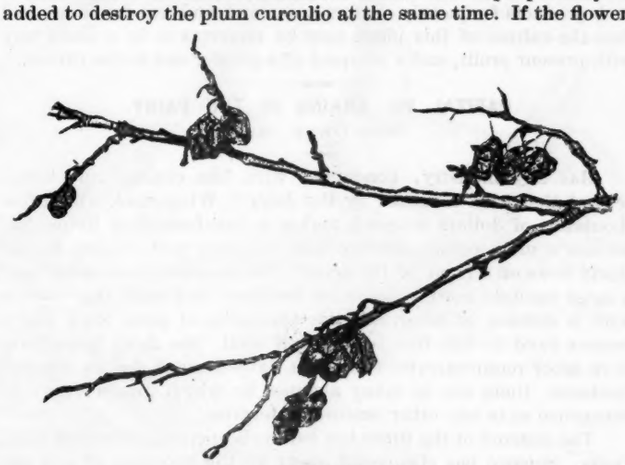


FIG. 5. MUMMIED PLUMS.

are affected, spray while they are dropping as every part of the tree which they touch will be infected. The spores will live for at least two years. The bark of the branches and trunk should be sprayed.

BERMUDA GRASS.

DICK NAYLOR, TEXAS.

In the Gulf States, Bermuda grass makes good, permanent pasture and excellent hay. The Texas stockman finds that it never gets in a hurry to be cut. It is much used to prevent the washing of land into gullies and preserving embankments, terraces, and levees. It is difficult to eradicate it entirely from land that has once been planted with it; yet it is comparatively an easy matter to subjugate it sufficiently to make a fine crop where it grows. If plowed under during hot, dry weather, the greater part of it will die, and the following spring the land can be planted in any crop desired, with a good assurance of a fine yield.

Bermuda grass land should be subjected to shallow cultivation. Even if the grass does crop out a little, it will do no material damage if the plows are kept running as they should be. It is not as formidable as crab grass to a man who understands handling it by frequent shallow plowings. This grass tends to keep the soil mellow. It also imparts fertility in a marked degree. A piece of poor,

run-down land, if set with this grass and allowed to rest until a good sward is formed, will be found much enriched, and most of the old gullies will be filled up.

Bermuda grass does not mature much seed in the United States, and the most profitable method of propagation is to sow, broadcast, the grass itself, cut up into fragments an inch long. Small bits of turf are sometimes planted in newly-plowed land by being dropped about two feet apart each way and pressed into the soil with the foot. It will spread rapidly, if not pastured too heavily.

MANUFACTURE OF SUNFLOWER OIL.

An article on the cultivation of sunflowers in a recent number of the AMERICAN AGRICULTURIST has brought a large number of inquiries on the subject. There is nothing in the process of procuring the oil from the seeds of the sunflower any more difficult than in pressing the oil from cotton seed. The whole seeds may be pressed in a cotton oil mill, and in precisely the same way. The whole seed yields about fifteen per cent. of oil, it gives thirty-three per cent. of shelled grains, which are equal to peanuts for eating, and these yield twenty-five per cent. of oil of the first quality. The cake left makes a better food for animals than the cotton seed, as it is devoid of the highly stimulating qualites of the cotton oil-cake. While at the present time this industry is in an undeveloped condition, there is no reason why the plant may not be grown with profit for domestic uses, as the leaves for fodder, the stalks for fuel, and the seed for feeding sheep, poultry, swine, cows, and even horses; for which uses it is free from any objectionable qualities. As an acre has furnished ten tons of air dry stems, and one ton of leaf fodder, with 2,500 pounds of seed, these products will afford a profit on its culture for these purposes; and if a demand should arise for the oil, which is excellent for lubricating the fine machinery now coming into increasingly extensive use in houses and factories, and moved by electricity, the way will be already made for the supply of all that may be required. It has been found that a ready supply of such products frequently creates a demand and use for them, and thus the culture of this plant may be undertaken in a small way with present profit, and a prospect of a greater one in the future.

CAPITAL VS. BRAINS IN THE DAIRY.

JOHN GOULD, OHIO.

Has any industry, conducted with like capital, any better reward than that returned by the dairy? What man, with a few thousands of dollars invested, makes as comfortable a living and secures a more certain income than the man with twenty-five or thirty cows on a farm of 100 acres? The manufacturer must have a large capital; must manage his business on a scale that carries with it division of labor, and the economics of piece work and a reserve fund to tide him over a dull spell; the dairy is uniform in its labor requirements; there is a daily demand for its finished products; there are as many avenues by which produce may be cheapened as in any other business enterprise.

The demand of the times has led to cheapened production of all kinds. Science has cheapened about all the processes of iron and steel manufacture, and thousands of other things, so that the article complete is furnished to the consumer far below the former price. As the article is cheapened, the demand increases. The manufacturer, by coming to know all the details of his business, and making a thorough study of it, is enabled to get all the value out of the raw material, or work up the waste into other marketable articles, so that the waste and residue of the past is fashioned into the useful of the present, and these wastes now often constitute the chief part of the net profits.

Now has our average dairyman availed himself of all these sources of profit? Is he a dairy student, all the time learning, always making a change for the better? Are his brains active? Is he alert? Does he comprehend the great mystery of Nature with which he has to deal, the mystery of life, its reproduction and maintenance? Does he understand that this cow is a more complex machine than all the mechanism of the great mills, and yet the mastering of the functions, wants and demands of this cow, and the manipulation of her product, constitute successful dairying? Has the dairyman found that dairying is dividing up into special lines, and the profitable dairy is no longer a general-purpose dairy? Has he the cow adapted to his purpose, or is he yet owning cows "thoroughbred in unknown breeding?" Is he yet feeding his cows in the expensive ways of the past, or is he adopting the silo, the big soiling crop, and concentrating his dairy efforts? Has he warm and well-lighted barns, and water at the door, or is he yet making his cows hardy by old barns, and a great deal of outdoor, winter exercise? Is he yet setting his milk in tin pans, or has he a hand separator, and getting the last globule of cream from the milk, and getting a pound more butter to each 100 pounds of milk? Is he yet making store butter and exchanging it for groceries, getting no cash, or is he making fancy butter and selling it in a butter market? Is he pooling his milk with that of his neighbors, and selling it at so much per 100 pounds, or does he insist upon its being tested for solids with a modern milk tester, and so get the value of the extra pound of fat in each one hundred pounds of milk that in the past he has been donating to his neighbor who was putting poor milk into the pool? Is he keeping up the fertility of his farm by all known methods, saving manure by a liberal use of absorbents, plowing under clover, putting rye in as a "catch crop" after corn, so that the fields shall not leach and filter away their fertility, so that his soil is all the while at work storing up plant food for succeeding crops? Has he reduced the cost of labor to produce crops to the lowest point? Is this man reading good dairy literature, so that he can keep up with the current dairy thought of the day, and find out all that is transpiring in the dairy world in way of experiment and investigation, and put the best things his broadening mind tells him is practical into use? All these points are in the line of better dairying, and are at variance with the plans of those who denounce all dairy advance as born of book learning, as if knowledge were a despisable thing, and all investigation a scheme of men to get a living without work!

All these are vital questions; the contrast between success and progress and the standstill conservative system that actually retrogrades. What business, after all, does pay better on the farm than a well-appointed and conducted dairy?

REARING EARLY LAMBS.

The most profit is made from the quickest sale of any product, and especially of such as must be fed expensively. And there is no quicker product and none other that is so profitable as the early lamb. One sells for as much in May as two in November, and the farmer not only gets the better price but he saves twice, or even four times, the feeding. Any large town or city furnishes the market for them, and the early sale makes it possible to fatten the ewes after the lambs are sold and market them out of the way for another flock in the fall. The kind of lamb, however, is to be thought of. The best of all is a cross of a Shropshire ram on native ewes—that is, considering the profit, for the pure lamb is to be preferred before the cross, were it not that the pure ewes are too costly to be made into mutton, as with the common ones. And the disposal of the ewes, and the less first cost make the larger profit. The ewes should be purchased early in September so that the lambs may come not later than in February, and if the flock is gathered in August so much the better, for the earlier they are in the market the more they bring. In this business one has three dividends, and the first cost returned within a year; the lambs, the fleece, the profit on the ewes and the first cost returned. This is a profitable business.

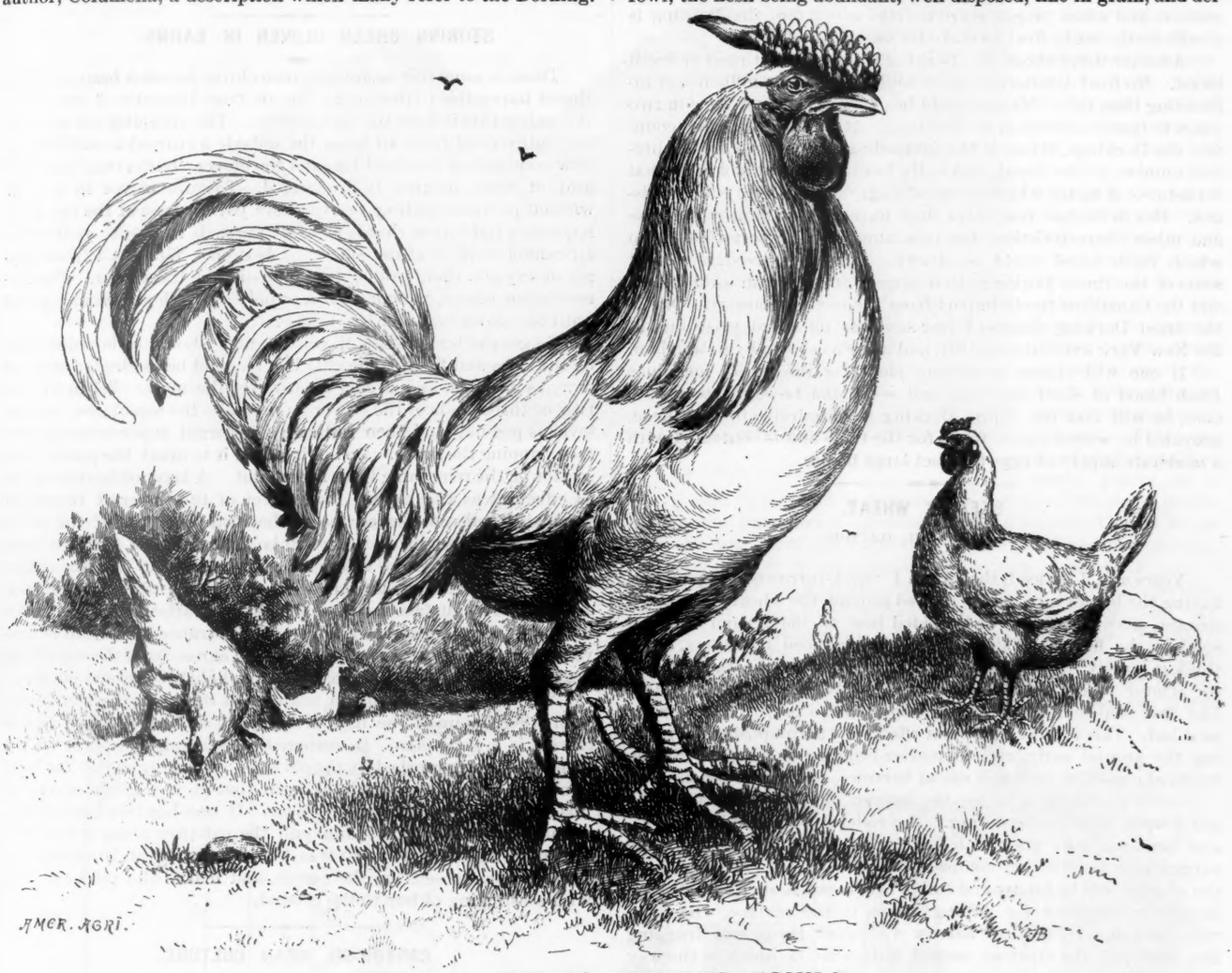
A NEGLECTED VEGETABLE.—BROCCOLI.

Broccoli is simply a hardy type of cauliflower, a vegetable that in the Middle and Northern States has no place, as it cannot be grown in summer, and is not as well adapted for autumn as the improved varieties of cauliflower. In Europe it is largely grown, as there it will endure the winters and perfect its heads in early spring, when fresh vegetables are in demand. In some parts of the South it could be grown to excellent advantage, particularly on the coast of Virginia and North Carolina, in what is known as the thermal belt where there are but few frosts and no extremes of temperature. Sow the seed in September, cultivate the same as cabbage, and it will perfect its heads in spring, when they will bring remunerative prices. Like all of the cabbage family, to be grown well, it should be given a deep and well-enriched soil. In soil in which cabbage can be grown successfully, broccoli can, and with the same treatment. There is but one variety that would be profitable to grow, the White Cape. Of this there are many strains, as there are of cabbage, without any marked distinction. As the price per head is four times as much as that of cabbage, and, as the cost of freight is not half as much, it should be a very profitable industry in the sections where it can be successfully grown.

THE WHITE DORKING.

H. S BABCOCK.

Twenty-nine miles south of London by rail, in a picturesque valley, through which flows a small tributary of the Mole, lies the market town of Dorking. "Dorking is celebrated throughout England for its romantic scenery, and has long been famous for a finely flavored breed of fowls, distinguished by their having five claws upon each foot. These fowls are in great demand in the London markets, and are regarded as the best table fowls produced in the country." The fowls are named after the town which they have helped to make famous. Whether the Dorking is a native product of Great Britain or whether, as some suppose, it was introduced into that country by the Romans at the time of the invasion by Cæsar, is not definitely known. There occurs in the writings of the Latin author, Columella, a description which many refer to the Dorking.



TYPICAL WHITE DORKING FOWLS.

"Let the breeding hens," he says, "be of robust body, square built, full breasted, large heads, with upright and bright red combs. Those with five toes are believed to be the best bred." These are Dorking characteristics, though differing somewhat from the modern standards.

Of the three varieties of Dorkings, the White, the Silver Gray and the Colored or Dark, the first is believed by many to be the oldest, though there is no definite proof of the fact. It is certain, however, that all three are old varieties, having been known and kept from the time "whereof the memory of man runneth not to the contrary." The colored is the largest variety, the white the smallest.

The White Dorking may thus be described. The head is large, surmounted by a rather heavy rose comb with well-developed spike; neck of medium length with full hackle; body nearly parallelogrammatic, the length being considerably more than the depth; breast full, wide and of good depth; thighs stout, very meaty; shanks rather short, but strong in bone; tail, in cock, large and provided with long sickles and abundant coverts; toes, five upon each foot, the supernumerary one curving upward; the plumage white throughout, with the shanks and feet white or flesh colored. The Dorking at once strikes the observer as being a heavy and useful fowl. Utility appears in its whole make-up. As the Rev. E. S. Dixon says, "The breeder and the farmer's wife behold with delight their broad breast, the small proportion of offal and the large quantity of profitable flesh." To the same effect are the words of an old writer, "These fowles have very short legges, and are small boned throughout, and the offal is very light, consequently the proportion of flesh is very large."

It would be easy to multiply quotations in praise of this fowl, for no breed has been more generously lauded than the Dorking, but the above give the spirit of the whole, and suffice for our purpose. From them it will be easy to glean that it is as a table fowl that the Dorking is worthy of praise. And it is an excellent table-fowl, the flesh being abundant, well disposed, fine in grain, and delicate in flavor. In a country, like England, where a white skin and white shanks are the *sine qua non* of good table poultry, nothing could be better than a well-fattened Dorking.

As layers the Dorkings are not to be heartily commended. The White variety is really the best layer, I think, but it is easily surpassed by many breeds. The simple fact is that it is too much to expect that in one fowl shall be united in a superlative degree the excellencies found in various breeds. We do not expect the Jersey cow to rival the Shorthorn as a producer of beef, nor the Hereford to equal the Ayrshire in the production of milk, and no more should we expect to find a first-class table fowl competing successfully with our best laying breeds, or the best layers equaling in table qualities a fowl like the White Dorking. It is sufficient that a fowl surpass others in one definite direction, and the fowls are few indeed that are superior to any variety of Dorkings for the table.

Dorking hens are admirable sitters and excellent mothers. A great deal of nonsense has been written about the danger to the eggs which their extra toe produces, but, in an experience of some

years with the breed, I never found any of the trouble that imagination, or theoretical writers have discerned. Among large breeds I never found one superior to the Dorking as a hatching machine and a brooder. Well do I remember one season when eggs did not seem to hatch any too well, and when I used several breeds as sitters. The only hen, that year, which hatched every egg entrusted to her was a Dorking. Of course this was probably a mere coincidence, but I know that no hens are better sitters than those of this breed. But the Dorking chicks are delicate things. They are difficult to rear. They need dryness—all fowls do but Dorkings more than almost any others. If one has heavy, wet land he would better try some other breed. The chalk formation of Sussex is admirably suited to the fowl, and though we have not exactly the same conditions anywhere in this country as are found in the English home of the Dorking, I should think that the dry soils of many parts of the United States would be admirably suited to its needs. When mature, and when proper surroundings are given, the Dorking is a sufficiently hardy fowl to make its keeping profitable.

Another thing about the Dorking is the constant need of fresh blood. No fowl deteriorates more rapidly under the influence of in-breeding than this. Males should be changed at least once in two years to insure success in its breeding. At one time, in this country, the Dorkings, through the inbreeding necessitated by the limited number of the breed, had sadly lost in size, and lacked in that robustness of figure which is one of their most striking characteristics. But in the last few years they have greatly improved in size and other characteristics, due to a number of importations from which fresh blood could be drawn. Canadian breeders exhibit some of the finest Dorkings that appear at American exhibitions, and the Canadians freely import from the mother country. One of the finest Dorking females I ever saw was the third prize bird at the New York exhibition in 1891, and she was shown by a Canadian.

If one will choose a suitable place for the breed, introduce fresh blood at short intervals, and select the breeding stock with care, he will find the White Dorking an admirable fowl to keep, provided he wishes choice fowls for the table and is contented with a moderate supply of eggs to offset large bodies.

SEEDING WHEAT.

JOHN M. STAHL, ILLINOIS.

Years ago, I noticed, that when I "back-furrowed" in plowing, having the horses turn on the plowed ground, the wheat germinated soonest, grew thriftiest, and yielded best on the ground tramped solid by the horses. This was doubtless noticed by others, and I think is largely responsible for the accepted doctrine that ground for winter wheat should be thoroughly pulverized and compacted. The first step in seeding wheat properly is to prepare a fine, solid seed bed. This is most easily and effectively accomplished by plowing the ground early, and thereafter bringing the ground to the required condition by much use of harrows, rollers and crushers.

Some are inclined to use the harrow too little, depending too much upon the roller and drag. The roller is a surface implement, and the drag goes not much deeper. If these only are used, the surface may be fine and compact, but, two or three inches below, the ground will be lumpy and full of crevices. A sharp steel-tooth harrow is excellent for pulling lumps to the surface, where the roller and slanting-toothed harrow will crush them, and dragging fine earth into the crevices, even if it does not do much in the way of pulverizing clods. A disc harrow will do this work better.

In ground properly prepared wheat should not be covered more than one inch deep. Unless the ground has been well compacted, the wheat will be covered deeper than this, even with the best seeding appliances. Seeds germinate better, and the plants make a stronger growth when the earth is settled about them. As wheat is not an exception, the press drill is better than the hoe drill. Some wheat plants stool until they each produce a dozen culms or more, and some culms bear an ear holding sixty grains or more; but one must not count on wheat producing 720-fold. However, the general trend of practice is to use less seed, which indicates that formerly too much seed was used or that conditions have so changed that now a less quantity of seed is best. The average quantity used throughout the country is not much less than six pecks per acre but on average land, in proper condition, four to four and one-half pecks of seed will give better results. No iron clad rule can be made for all soils and all seasons. It is a mistake to fix arbitrarily a practice, or a method as best for all. What is best for one field may be far from the best for another field or locality or climate. Wheat does not, cannot, turn into chess or cheat. The chess seed is either in the field or among the wheat sown. A little chess can gain mightily on wheat. The chess plant thrives best under conditions that winter-kill the wheat. Unless the seed wheat and the seed ground is freed from chess, great stools of chess will be found in the open places, and slender stalks of chess all through the field. Chess is much hardier than wheat. Few seeds of chess fail to germinate, and few plants fail to stool and to bear full heads. Hence chess will increase much faster than wheat. One grain in a handful of the seed will be many grains in a handful of the harvest. He that sows the wind of chess will reap the whirlwind. And so it is with cockle and other pests. The only safe and proper thing to do is to sow absolutely clean seed. I put my seed wheat through the fanning mill, no matter how clean it may appear to be, and I find that this pays. None of my wheat turns to chess. I have succeeded best with one variety, and not a mixture of several.

STORING GREEN CLOVER IN BARNS.

There is some risk in storing green clover hay in a barn, it being almost impossible to shut away the air from the sides of the mow, and unless this is done the clover heats. The escaping air inviting the entrance of fresh air from the outside a current is established, slow combustion provided for, and the clover "burns out," just as a heap of horse manure is fire-fanged. To cure clover in a mow without previous wilting to evaporate part at least of the sap in it, requires a tight mow that is a close approach to a silo, so that the air cannot come in at the sides and bottom. Without a fresh supply of oxygen, there can be no combustion of the clover. The fermentation ceases, which, with a supply of fresh air, would go on until the clover was a charred mass.

To get the best results, the clover mow should be boarded close on the sides and floor. The cut clover should be as clear of rain, or dew, as possible, and evenly spread over the mow. When all but two or three loads of the clover is in, make the top of the mow as level as possible and then roll strips of tarred paper over the surface, lapping the strips. Do not tread on it to break the paper; and scatter on the remaining loads for weight. A layer of boards will be as effectual as the paper. The object of this layer of boards, or paper, is to prevent the escape of the heated air, and if the air is imprisoned in the clover, there will be no entrance of fresh air from the outside. In the silo, where the walls are higher than the silage, the air that falls upon the surface is met by the ascending current, and only a few surface inches of the silage are affected. In the mow where the sides are somewhat open, the entrance of air can be prevented to a great extent by checking the egress from the top of the heated air. This is accomplished by the lightly weighted cover.

With old hay at command, to alternate the layers of green clover with other layers of the hay, using about a third as much hay as clover, is a good plan. In curing, the escaping dampness of the green clover is absorbed by the old hay. In raking clover for hand pitching, it is not generally known that it is a great saving of "backbone" to rake the field twice. If one has two horse-rakes, one may follow the other, and pull the windrow along a few feet. This rakes up the clover that was left untouched at the bottom of the windrow, loosens up the bunch, and makes the pitching easy with no sticking of hay to the ground.

CASTOR-OIL BEAN CULTURE.

W. L. MOORE, TEXAS.

The culture of the castor bean is, at the present time, attracting considerable attention in Texas. The plant is found growing wild along ditches and branches in all parts of the State, sowing itself and continuing year by year. Drouth does not appear to affect it in the least. The soil best suited to the plant is a light, rich, sandy loam, although any dry soil will produce good crops. The seed should be planted in rows three to six feet apart, and in hills three feet to six, three or four seeds to the hill, as cutworms are sometimes damaging to the plants. When the plants are six inches high, thin out to one plant. It should be cultivated like corn. When it is up enough, so that the rows are plainly seen, it should be cultivated with a small plow, but not very deep. Good, clean cultivation is needed throughout the season. The seeds begin to ripen in Texas the first of July. The castor-oil bean will, no doubt, prove to be a valuable crop for the Texas farmer. The yield is from thirty to sixty bushels per acre, which will pay better than cotton, as soon as the oil mills, now being erected, are in operation.

A NEW INDUSTRY—BIRCH OIL.

T. B. HOLMES, CONNECTICUT.

Birch mills or distilleries, of which there are but eight in existence in the United States, have been in operation in Connecticut about six years. They have made a demand for the black or sugar birch, with which the wooded hills in the State abound, and the getting of this birch and the hauling of it to market has supplied the farmers with a profitable employment for four years.

White and yellow birch are not used, as they furnish very little oil; not enough to pay the distiller for the labor of extracting. Black birch can be used only when the branches are bare of foliage. Only saplings and small branches are marketable. They must not measure more than two inches and a half in diameter at the largest part. Six years ago, when the birch mills began work, the proprietors paid the farmers one dollar and fifty cents a ton for birch brush delivered at the mill. At the same time the distiller was receiving from six to eight dollars a pound for his birch oil. As the cost of operating a distillery is very small, it soon became apparent to the farmers that the distiller was getting altogether too much the best of the bargain, and they refused to draw birch brush for less than three dollars a ton. This price was readily paid by the distillers, and it has prevailed ever since, though, from the fact that there is a synthetic oil on the market which has materially reduced the price of the genuine article, the distillers argue that the farmers should furnish brush at a lower rate. The farmers are of the opinion that they earn all the money that they get out of it and, as the distillers are dependent upon them for their raw material, they refuse to furnish brush for less money than is now paid.

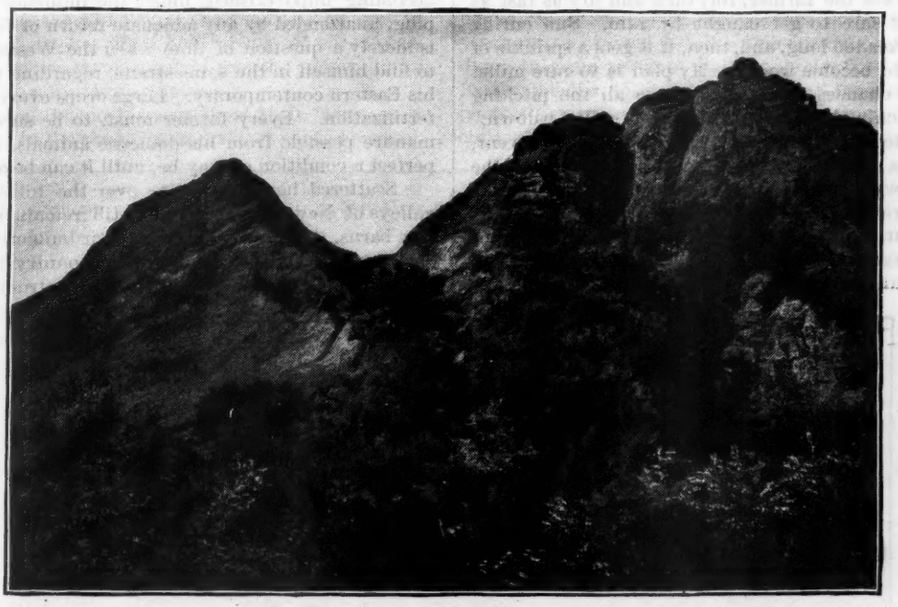


FIG. 1. VIEW OF BIRCH FORESTS ON DEVIL'S LEDGE.

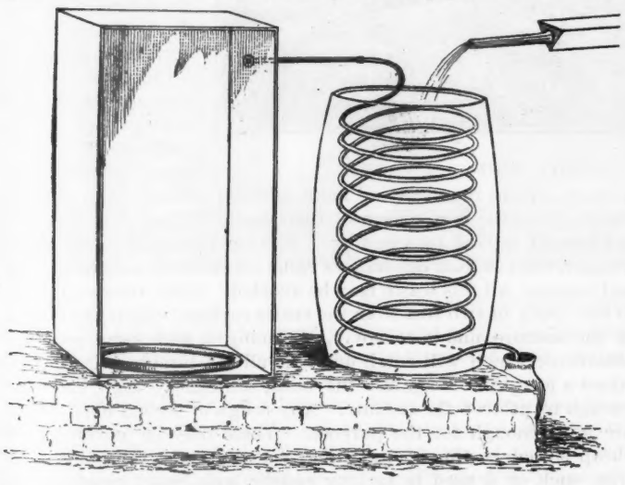


FIG. 2. TANK AND BARREL WITH WORM.

The benefit that these distilleries are to farmers who are fortunate enough to own birch brush will be better understood when it is known that a dozen men are drawing brush to one distillery, with a single horse team, a distance of eight miles. The largest amount that they can possibly carry is 600 pounds, less than one-third of a ton. For this labor they receive ninety-one cents. Each man has furnished the brush, the labor of a horse and himself one day for this sum. Yet he performs the labor cheerfully, and considers himself very fortunate to be able to get the money. Those men who live nearer the distilleries and have stronger teams make more profitable work of it, for they can carry two tons of brush at a load, and get to the distillery twice a day. Along the sides and on the top of the "Devil's Ledge" mountain, in the region famous as the "Devil's Hopyard," in the northwestern part of New London county [a view of which, engraved after a photograph, is seen in Fig. 1], birch brush is cut and drawn to the valley road over the roughest paths imaginable. In many instances, the brush is carried by hand to teams a quarter of a mile distant from the trees.

The birch brush is cut into pieces about five inches in length by a machine built for that purpose. These pieces are thrown into strong water-tight wooden tanks fitted with copper bottoms. In the bottom of the tanks is laid a coil of steam pipe [as shown in Fig. 2]. Three feet of water is put into each tank, the top is put on and hermetically sealed, and steam turned on. The water is kept at a boiling point six hours. Into the side of each tank, about six inches from the top, a steam pipe an inch in diameter is inserted. This pipe is connected with a worm placed in a cask of cold water that is continually flowing. The steam passes through the pipe and is condensed in the worm. The oil drops from the bottom of the worm into a glass jar placed to receive it. [The exterior view of one of these distilleries is shown in Fig. 3.]

The color of birch oil unrefined is a dull brown. When clarified it is of a very light green hue like the essence of wintergreen. At first the oil was refined by a chemical process, but this was very expensive. Finally, some one hit upon the idea of spreading a heavy woolen blanket over the wood inside the tank. The steam, in passing through the blanket, was cleansed, and the oil, when deposited in the glass jars, was pure. Birch oil is heavier than water, in which it sinks like lead. In action, it resembles quicksilver. It now sells for about three dollars a pound. One ton of birch yields four pounds of oil. Birch oil is used in the manufacture of confectionery, and in the tanning of Russia leather. The oil is rubbed in with cloths on the flesh side of the leather but is not allowed to pass through to stain the grained side. It is sold largely under the name of essence of wintergreen for flavoring purposes. It is very strong, and is greatly diluted when used.

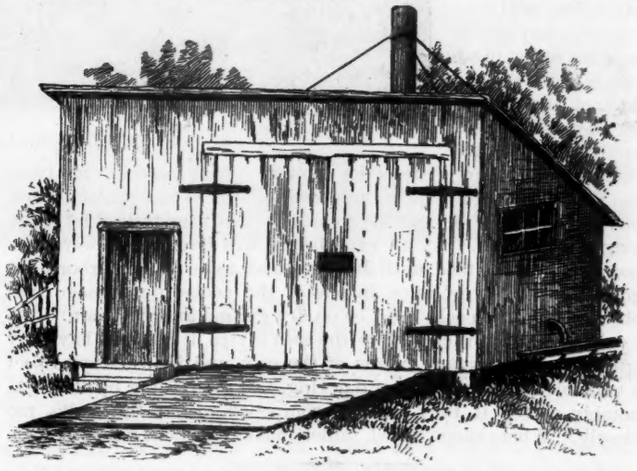


FIG. 3. BIRCH OIL DISTILLERY IN SOUTHWESTERN CONNECTICUT.

CURING MILLET HAY.

G. JOHNS, OHIO.

The Vermont man who, in a recent number of the AMERICAN AGRICULTURIST extols millet as a grand food for the dairy cow, does not overestimate its value. If cut when fairly headed out, it has no superior as hay, unless one excepts clover hay of the best grade. In Ohio, millet thrives best on the previous year's sod, following corn, and, if sowed the last days of May, and there is an occasional shower, it will attain a great growth. Curing it is the task that most perplexes the farmer, for, turn and dry as fast as may be, one is almost sure to get caught by rain. Sun curing bleaches it out, and takes too long, and, then, if it gets a sprinkle of rain the stalks seem to become woody. My plan is to cure millet in the cock; take no chances of rain, and save all the pitching possible. After the machine has a couple of acres of millet "down," the horserake is started the same way that the machine went, raking one swath at a time. This makes clean work. Make the windrows true, and, when the field is raked, turn the horserake into the end of a windrow, lock the lever and rake as far as possible. Lift the rake head out, go as far on the windrow as the amount raked, and then rake again. Reverse the process at the end of the row and rake to the bunches that which was skipped. If the sky is clear, one may mow and rake a second bout, and then cock up the whole at one job. To work expeditiously in cocking, let two men work together, one on each side of the bunches, forking out the center and taking up the bundles that were pushed in with the rake. Fork out from the bottom, top off, and take another. About three big heaps can be made by two active men in as many minutes. Let this millet remain in the cocks ten days, or more, to cure. If the weather has been rainy, it may be well to "upset" many bunches of the millet in advance to let the sun dry out the stratum of hay next to the earth. By this plan, such hay loses very little of its color in curing, and is free from the toughness often seen in sun-cured millet. When millet is well put up in cocks of 400 and 500 pounds, it loses very little if left even longer in the field. As an experiment, five large cocks were purposely left in the field until January, and, aside from harboring a good-sized colony of mice in one of the cocks, no damage was observable. The cocks must be on dry ground and shed rain.

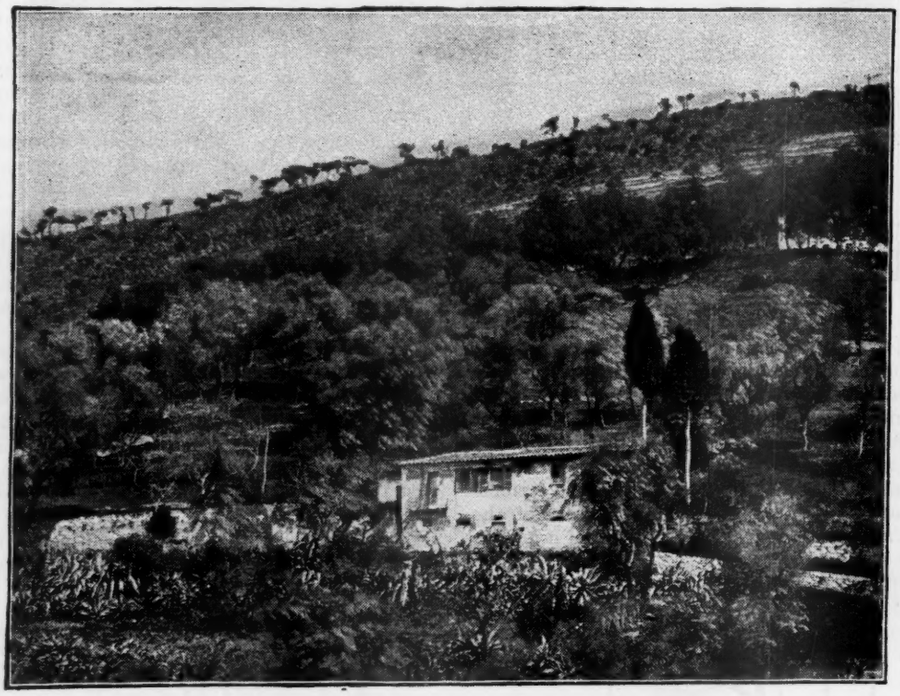


FIG. 1. AN ITALIAN PEASANT'S HOME.

Where millet is cut before the seed is ripe, it does not have any effect upon the urinary organs of the cow, and is in every respect a valuable element in winter dairying, and the feeding of all stock, notably calves, if they are not compelled to eat the stalks too closely. Where silage is fed, millet makes excellent noonday feed.

Keep a Record of Newly-Set Trees.—It is not good policy to trust wholly to memory or labels for the record of newly-set trees. In setting a new orchard or filling in an old one, or setting various kinds of trees about the house, make a record of it in a book kept for the purpose and placed where it will be accessible at all times. The same applies to small fruits. This record will not only be an aid to the one who plants them, but to those who may take his place. Also note the date of planting, and how old they were when set. Some trees and vines need to be trimmed and managed differently from others, to obtain the best results, and to know just where they are located is a good thing. Plants and shrubbery with long, difficult names should also be recorded in the book, with both the common and botanical name. Record the season of bloom, and if any special care or cultivation is recommended, write it out, or, what is better, paste in the printed directions with your notes.

SAVING MANURE.

MYRON S. PERKINS, MASSACHUSETTS.

Manure lies at the root of successful husbandry in all of the older States. The virgin prairie soils of the great West are fast becoming impoverished, under the influence of remorseless cropping, unattended by any adequate return of fertility. Therefore it is merely a question of time when the Western farmer is destined to find himself in the same straits, regarding the use of manure, as his Eastern contemporary. Large crops everywhere require liberal fertilization. Every farmer must, to be successful, make all the manure possible from his domestic animals, and preserve it in as perfect a condition as may be, until it can be applied to the ground.

Scattered here and there over the hillsides, and among the valleys of New England, there still remain many of the oldtime cow barns, though the hands of their builders have long been dust. One can scarcely drive through the country in any direction without seeing one or more of these ancient structures, the chief inconvenience of which, from a modern point of view, consists in the absence of convenient pits in which manure may be stored. The dung, as fast as made, is thrown through windows or openings behind the cows, where it accumulates in heaps, against the buildings. Here it is exposed to the wasting effects of rain and sun, frost and heat. The sites of these barns being usually somewhat elevated, it is not unusual, after a shower, to see a stream of dark fluid, charged with fertility, flowing into some brook or swamp, where it is forever lost to the purposes of agriculture. What makes it worse, is that the urine and more soluble portions of the manure, (which, from the very reason of their solubility, are most valuable) are soonest wasted by leaching. Manure managed in the above manner, loses at least one-half its value. Now, with very little labor and expense, all this waste may be avoided. First, remove the soil to the depth of two feet from the entire surface, which the bottom of the manure pile is to cover, replacing it with some good dry absorbent, which will catch and hold all the liquids. Next construct a lean-to roof against the barn, sufficiently high, and large enough to protect the manure. Any rough or second hand boards are good enough for the purpose. These may be covered with cheap shingles, tin or anything water proof. The thin sheet iron, such as is used in making caustic soda casks, makes a tight and durable roof, and can usually be bought of soap manufacturers for a song. The manure, even when kept out of doors, may be kept practically without loss. Matters will be greatly facilitated, if cows are always plentifully furnished with bedding sufficient to thoroughly absorb the valuable materials in the urine.

Use Good Judgment.—A rainy or a drouthy spell will alarm some men and drive away their good judgment, and they will plant or sow or harvest before the proper time. Grain cut too early may mold. Hay cut too early is less in quantity. Ground plowed too wet is cloddy, the animal weaned or bred too early is stunted.

ITALY AND ITS PEASANTRY.

F. C. CHAPPELL.

Excluding a comparatively few large landed proprietors, the agricultural population of Italy may be divided into three classes, viz:—1, small proprietors; 2, tenant farmers; 3, laborers. The first hold farms ranging from two and one-half to seven and one-half acres. They mostly reside in the mountainous districts, but, so far from being prosperous, they are only too glad to get work in the plains as day laborers, during the busy season, while those unable to secure such employment wander round the country seeking work that will enable them to eke out the scanty living secured from the few acres which are heavily taxed. Some of these peasants are thrifty but many live from hand to mouth. Easy living in summer is followed by suffering in winter.

The second class—viz., tenant farmers—hold their farms on a mixed system of a share in the products, and a rent paid in corn or money. The holdings in the north and central part of Italy average from twenty-four to forty-nine acres in area; and those in the southern district average over 245 acres.

The third class—viz., the laborers—may be divided into two sections, those permanently attached to the farms, and others who are only casually employed. The social condition of the permanent hands is generally regarded as being fairly good as compared with the state of other classes of the community. The condition of the casual laborer is by no means so regarded, and has attracted, of late years, a good deal of attention. Several causes have contributed to this result. Internal political disturbances; the concentration of the national intelligence toward political ends; the withdrawal of capital from agriculture, and subsequent investment in purely commercial undertakings; the sale of domain and church lands; the prevalence of disease among the silkworms, the vines, and the oranges and lemons; the fall in prices of important native produce, due to foreign competition—all contributed toward the deterioration of agriculture as a remunerative form of industry. As the population increases the chance of the casual laborer becomes still more precarious. These poor people are badly fed and miserably housed. Unable to find work they resort to theft as a means of living. Even if such men have regular employment they cannot earn more than between $40 and $60 per year. The daily wage of an adult laborer is reckoned to be $0.40 in summer and $0.30 in winter; but this takes no account of the time of enforced idleness. An average of the whole year would not give a man of this class more than $0.20 a day. Of course in harvest time wages rise, and for a few weeks $0.50 to $0.60 a day may be earned. Women receive from $0.10 to $0.12 a day. In the South laborers are a little better off. Able-bodied men can generally find employment at a yearly wage of over $60, the average ranging from $0.20 to $0.30 a day. In some parts of Italy—notably, the important province of Basilicata—the soil is unsuited to small farming; while in other districts absentee landlordism is largely responsible for the immense emigration that is now taking place to America and other parts of the world. Even regarded from the most favorable point of view the condition of the Italian peasant is poor and miserable. Want of proper nourishment generates disease, notably, the "pellagra," a constitutional complaint due to poorness of living, frequently leading to suicidal mania. The people have occasionally resented these conditions of living; between 1878 and 1884, thirty-one strikes of agricultural laborers took place. These have not been beneficial, and the people seem to have resigned themselves to the only means of escape—viz., emigration to the higher wages of America.

FIG. 2. VIEW OF THE BORDIGHERA ON THE RIVIERA, ITALY.

In some parts of Italy, for example, in Sicily, the peasant rarely obtains what English and American people regard as the merest necessaries of life. Tea, sugar, beer, tobacco, and similar things are almost unknown to him. He has plenty of cheap wine because that is literally cheaper than water, especially pure water. As for the refinements of life, such as books, pictures, scientific or literary studies, they are meaningless words to him. In this district he lives mainly on black bread, with an onion, or a little boiled cabbage, beans, etc.; this food is seasoned with wild herbs, and,

when in season, with fruit. On high days and holidays a goat or a sheep may be killed, and the cooked meat is carried round, in bits on a small pitchfork, for sale, and is eaten with the fingers. The seeds of melons, boiled in water, is a favorite "dish" with the poorer and middle classes. Grapes and bread form many meals.

The ancient and picturesque costume of the Sicilian has practically become obsolete. The people cannot now afford to buy such brilliant garments, and have to content themselves with a short jacket, trousers of coarse brown fustian, with leggins swathed up with cross bands, and moccasins on their feet. The goatherds and swineherds go about in the mountainous districts clothed in the undressed skin of a black sheep, with the wool turned inward, thus giving them the appearance of a Robinson Crusoe.

The poorest class of laborers, the casual hands, generally live in houses consisting only of one room, sometimes paved with rough stones, and sometimes not. The bed is often made of boughs of trees twisted together; "settees" of similar construction; a chair of the dirtiest description; a roughly-made table; and a pot, pan, and trencher. Not a superabundance of furniture! In this one room live not only the family but the poultry, pigs and donkeys, if they have any. Although the room is generally very dirty, yet the bed linen is kept clean and tidy. The rent of such a house ranges from $5 to $10 a year. As there is no chimney the smoke from the fire has to escape through chinks and crevices in the roof and walls through which, of course, the wind rushes from every quarter. Even the "farmhouses" of the tenant farmers have little better accommodation, one room being reserved for the farmer and the other for his men.

[The accompanying illustration, Fig. 1, shows a very typical peasant's house, the olives and firs growing above in the poorer ground, and the aloes and cypress so common as division of property landmarks. Fig. 2 presents a view of Bordighera, on the Riviera.]

THE GOOD QUALITIES OF THE MULE.

HENRY STEWART.

The hybrid animal which is part horse and part ass, evinces more than any other such cross, perhaps, all the distinguishing characteristics of both the parents. He has all the good qualities of the horse, some however being modified by the interfering tendency of those of the ass. Thus he has the strength, size, and form, with much of the sagacity and docility of the dam, and the obstinacy in good as well as bad, of the sire, with his hardiness, longevity, surefootedness, untiring patience, and robust constitution.

A mule is said, and thought, to be extremely obstinate, proverbially so, but this quality in this animal has its most useful development, for to it is due the fact that a mule never balks, but persists in pulling until he lies down for inability to use another muscle. It begins work earlier and continues longer by several years than a horse; it is rarely ever sick; and, generally, unless wofully misused has nothing the matter with it from the time it begins to work at three years old until it is discarded at the age of forty. Mules have been known to live and work more than forty or fifty years without any rest by summer pasturing, but constant tugging of heavy loads on mountain roads, throughout the entire years. Their digestion is remarkably strong, and their appetite is easily satisfied. In the absence of its usual corn and blade fodder, it will most contentedly make a meal of the bark of a tree cut for the purpose on the roadside, where the driver camps at night after twenty-five miles of heavy pulling, with no bed but the ground and no roof but the starry infinite above. In cold and heat; rain or snow; in mud or over rocks; it wends its way without a break, or an objection; and brays for its coarse fodder and eats it with excellent appetite, wherever it may stop for its short rest.

The mule is no racer, but it may be trained to travel under the saddle or in light harness at a very good speed, and it will maintain its pace for ten or twelve hours with more steadiness than a horse. Its compact build makes it the best pack animal. The horse is the more luxurious animal, and more human in its disposition. Its nerves are more acute, it has higher instincts, and is more refined. It is kinder in disposition, and is more easily and strongly attached to its keeper, and owner, who uses it kindly. It can make a more vigorous effort on the spur of the moment, but cannot maintain a slow dogged energy like the mule. It requires more food, and that of a better quality for these reasons. Where quick work for a short time is wanted the horse beats the mule, but for the slow draft and unchanging toil, the mule is the more useful. A mule is kept one-half more cheaply than a horse. It may be fed on blade fodder and a few ears of corn day after day without any change, and will do more work on this coarse fare than a horse of 200 pounds more weight. This character is so well fixed that in the South, where all the hard work is done by mules, a mule of 1,000 pounds is worth $100 or $150 more than a horse of the same weight, and for smaller animals the difference in value is $50 in favor of the mule.

For a few years past I have been rearing young mules and horses, and while the colts get the best hay and more grain, the mules get corn fodder, the coarse hay, and few corn ears. An accurate account of the cost of feeding the two kinds of animals up to three years old, shows that the mule may be reared for half the cost of a horse colt. A pair of small mules cost me less than $20 a year for the two years they were fed, and they lived during the summers in a wood lot, and cost nothing for their pasture. A mule will live where a horse will starve, and, when out of work, enjoys the coarse feeding of the woods. When the horses come to the gate and wait to be brought home for their feed, the mules have to be hunted up, and bells are put on them so that they may be found. On the whole I am very sure that a pair of mules will do twice as much work as a pair of horses the same size, or somewhat larger, at half the cost of feed, and other expenses. This takes into account the feeding, the work, and the longer life. Much is said about the ill nature of a mule. This is undeserved. Its frequent viciousness is taught to it by ill-treatment and general bad management. A mule will never kick unless it has been taught, except in frolicking when young. It is really affectionate and good-natured, and when otherwise it gives only what it gets. When kindly treated from the first by those who rear it, the mule will be kind, docile, and even affectionate. It will not be so demonstrative of its affection as a horse as kindly trained, but it will show its good nature in its own more sober manner. The horse is a subject for the poet, the mule for the man whose life is spent with a freight wagon, or a plow, before him.

THE GENERAL PURPOSE HORSES.

D. B. HARRIS, VIRGINIA.

A general purpose horse should be sound, sensible, free from vice, medium size, about fourteen to fifteen hands high, weighing about 1,000 pounds, not too large for riding nor too small for work, should carry his head well up to give him style, should have sloping shoulders, should carry his feet near together to make him surefooted, should ride well and drive well, should have an easy mouth, should work well to plow or wagon, should drive with single check or double reins, and above all should not be balky.

In breeding general purpose horses it is very essential that the sire should be of the best disposition, should ride and drive and work well anywhere and the nearer thoroughbred the better. The mare should be medium size, stylish, and have endurance. The general purpose horse stands hard work, in the long hot days of summer, much better than the heavy draft horses. For the show ring a horse should not be too fat but should show a little of the rib. The fat on a horse is sure to hide defects and judges should be very careful how they award premiums to fat horses. More attention should be given to breeding general purpose horses for they are intrinsically more valuable, more difficult to find, and are in great demand. It is my experience that a colt takes endurance or bottom from its dam and its disposition from its sire. If this could be fully established it would be of vast importance to all horse breeders. English hackneys make good general purpose horses if crossed with suitable Thoroughbreds. Hackney style is hereditary.

To Get High Prices for Fruit.—When fruit is a glut in the market, the grower should have some means available for storing it till later in the season when prices will be more remunerative. Peaches and such fruit would be very salable at Christmas time, and early cherries in September. It is easily within the reach of fruit growers to master the market and hold their surplus when prices are too low. It can be done by cold storage, securing a temperature of forty to thirty-two degrees. American experience favors a temperature of thirty-four degrees, but in Australia forty degrees gives the best results in the warehouse or during the two months' voyage to England. Fruit-retarding houses can be built and maintained at less expense in the country than in the city. A coöperative society of fruit growers could readily manage such an enterprise, sell their stuff to the best advantage and get all the profits of the business instead of having the major part retained by commission merchants and city cold-storage companies.

A USEFUL GARDEN FLOWER—THE ASTER.

G. A. WOOLSON, VERMONT.

Asters are within the reach of all; for in these days the double, deeply imbricated, perfectly formed and exquisitely colored flowers, which the seedsmen furnish at almost nominal prices, are as different from the old-time China aster as day is from night. They are easy of culture, and possess such lasting qualities that they richly deserve the prominent place they hold in the floral world. True, we miss the shades of yellow and bronze found in chrysanthemums, but the wide range of color from the hue of a "Jacque. rose" to the faintest blush tint, or from rich purple to pale mauve ought to satisfy any ordinary mortal; but if hard to suit, the pearl-tinted, long-petaled White wins the heart of a "Mum" worshiper. General culture recognizes the value of the aster as an out-of-door plant, to which class the aster need not be confined; for an aster can be lifted into pots while in full or partial bloom, and finish its career in life with greater ease and more leisure indoors, than if exposed to fall rains and early frosts. It is well to have extra plants in a side bed for this purpose, as one sometimes hesitates to break up a conspicuous bed in the garden, or on the lawn, for any reason. I tried raising asters in pots, but with less success and more trouble; and unless the pots are plunged considerably below their brim, the other plan is preferable. A collection of chrysanthemum-flowered asters makes as fine a display in a window as their more highly-favored rivals. A pot of asters, which have been carefully lifted, thoroughly watered, and left in the dark for a day, form a delightful and extremely sanitary bouquet for the sick room, where flowers are sure to find their way, and where they are apt to be neglected, and are, in consequence, unhealthful. Few plants will stand this kind of treatment while in full bloom, but well-regulated asters are not subject to nervous or other prostration like Mrs. Alpheus Hardy chrysanthemum and kindred beauties, but they have a strong constitution, which enables them to live both out of doors and in the house. Taking it all around, the aster is a very valuable flower, and I advocate an aster place in all gardens. It is one of the best hardy flowers.

TYPES OF ASTERS.

Pure Well Water.—An old woodpile kept in the same place for many years is frequently a source of corruption, and the earth, if naturally sandy or porous, will be found to be in an infected condition many feet below the surface. Should a well be located within twenty feet of the old woodpile, more or less of the leechings will drain into it. The greatest source of danger lies in throwing the kitchen slops on the surface of the ground near the well. It may take twenty or even fifty years before the water is rendered unhealthful, but it will certainly occur if the practice is continued.

GETTING READY FOR EARLY SPRING FLOWERS.

EBEN E. REXFORD, WISCONSIN.

September is the best month for planting spring flowering bulbs, though October will give excellent results. November is too late at the North, as cold weather is likely to close in before the bulbs have formed many roots. In order to get the bulbs in time for early planting, be sure to send your orders as soon after the receipt of catalogues as possible. In selecting a location for a bulb-bed, choose a place that is naturally well drained, if there is such a one about the place. If not, see that you make it a desirable one by thoroughly draining it. More bulbs are lost from water standing about the roots late in spring than from any other cause. If the bed needs draining, dig out the soil to the depth of at least a foot, and a foot and a half is better still. Throw the soil on one side, and let it lie there until the sun has an opportunity to make it mellow. Go over the premises and gather up all the old crockery, tin cans, bones, in short, anything that does not decay readily, and dump these things into the bottom of the excavation, where they will act exactly as the material put into the bottom of a flowerpot does—that is, they will prevent the earth from settling down into the bottom of the bed the same as before it was removed. They will keep it up, and through the cracks and crevices between them water will run off readily in spring when the ground is saturated through and through with the moisture. If material of a non-decayable nature is not at hand, chips can be used, but after a little time they decay, and the bed becomes compact, as at first. Stones can be used also. Bulbs must have a rich soil, in order to do their best. And this soil must be mellow. When you get ready to return the earth that was taken from the bed to its original place, mix with it a liberal quantity of thoroughly rotten manure from the cowyard. Be sure to use old manure. Rather than use fresh manure I would go without any. Add the manure to the original soil, and mix it over and over until you have a compost that is light, friable and porous. You need not be afraid of mixing or working it too much. Bulbs should never be kept out of the soil longer than can be helped. Plant them just as soon as you get them, and get them just as soon as possible in the fall. Do not make the mistake of planting them in the hit-or-miss fashion which generally prevails, if you want them to be most effective. Keep each kind by itself. If contrasts of color are wanted, these

can be obtained by selecting different varieties of the same kind of bulb. Among the tulips can be had scarlets and yellows and other light colors in sufficient variety to afford charming and strong contrasts. In the hyacinths, reds, whites and blues afford ample chance for contrast. But do not plant double and single sorts promiscuously because they happen to be of the color desired. Better keep each kind by itself. The same will apply to tulips, which show best in masses.

If the soil in which bulbs are to be is naturally heavy, enough sand should be added to lighten it. Bulbs are exceedingly impatient when standing in a soil which retains a great amount of moisture in spring, and a sandy soil will not do this. With a soil made porous with sharp sand, and underdrained, you can hardly fail to grow bulbs well all over the North, and no part of your garden will afford you greater pleasure.

COMMON WEEDS IN THE MISSISSIPPI VALLEY.

L. H. PAMMEL, IOWA EXPERIMENT STATION.

A soil, once tilled, soon becomes covered with weeds, even though it be miles from habitations. Those who have not noticed nature's way of scattering seeds and fruits wonder where the weed seeds grew. The seed of a thistle with its long feathery pappus is carried by the wind for many miles. The cocklebur with its prickles adheres readily to the hair of animals. Tumble weeds roll over the prairies for many miles. No wonder then that weeds appear when the soil is plowed.

Weed migration in the United States is full of interest. Many of the weeds of the North, South, East and West are unlike, but some are cosmopolitan, occurring throughout the civilized world. The Canada thistle (*Cnicus arvensis*, Hoffm.) and the Ox-eye Daisy (*Chrysanthemum leucanthemum*, L.) are such common objects on the Atlantic coast that they are passed without much comment, though recognized as great pests. In the Mississippi Valley, a single small patch is a great curiosity, but may well be an object of great fear. The common thistle (*Cnicus lanceolatus*, Hoffm.) is rapidly increasing in pastures and along roadsides in Iowa, Wisconsin, Illinois and Minnesota, and is causing considerable alarm.

From the Gulf of Mexico to Wisconsin and Minnesota the cocklebur (*Xanthium Canadense*, Mill.) and its variety (*echinatum*, Gray) are extremely troublesome, especially in the rich alluvial soils along the Mississippi and Missouri rivers, where hundreds of acres are infested. In Southern Iowa, and in Kansas and Texas the roadsides for miles abound with a luxuriant growth of this weed. Texans regard it as an indication of good soil. This is not, however, the universal rule, for it frequently grows on poor clay soil.

The Great Ragweed (*Ambrosia trifida*, L.), abounds throughout the West, seeking the richest and best soil. The borders of fields along fences, roadsides and streams contain this homely weed, often twelve feet high, producing a strong stout stem. In Texas, this weed is commonly called "Bloodweed." Although I had known the plant from boyhood, as it was part of my work when a boy to remove it from fences and fields, I saw no reason why it should be called "Bloodweed" till a Texas negro told me that, when broken off, a colored juice exudes. Since then I have broken many young shoots and found a brownish juice, which, when exposed to the air a short time, changes to a carmine color. The best way to see the effects of the stain is to break off a few branches and allow the juice to drop on the hand, when the hands soon become stained.

The Sunflower (*Helianthus annuus*, L.) is another conspicuous weed. Fields, fence rows and railroad embankments are covered with it. It is certainly a beautiful sight to see thousands of these plants in flower. Some of the Iron weeds (*Vernonia*) also appear in rich soil, though they can scarcely be designated very troublesome. In Missouri several species are abundant in the bottoms and on clay soil. They are readily subdued by culture. The most troublesome weeds of the Prairie States originated in the Great Plains.

WINTERING GERANIUMS.

J. L. TOWNSHEND, UTAH.

For the last five years I have kept my bedding geraniums in the cellar over winter, and the plan has proved a very successful one. The plants are left in their beds, covering them at night to protect from frost till the approach of severely cold weather; then they are dug carefully to preserve the roots. At least two-thirds of the tops are cut off and the plants closely packed in strong, deep boxes with the roots well covered with earth which is sifted and packed among them. After being thoroughly watered the boxes are placed in the shade for a few days, and stored in a dry cellar till spring. They require no further attention than an occasional watering. When removed from the cellar in the following April or May the plants are covered with new shoots, and are gradually exposed to the sun till the time to again transplant to their beds on the lawn. The stocks being large and strong, in a few weeks the beds are beautiful with foliage, and soon present a mass of flowers.

FLOWER PITS AND GREENHOUSES.

MRS. L. D. ELDER, NEW YORK.

If every one knew how cheaply a glass roofed room for keeping and growing plants could be constructed, more people of moderate means would have small greenhouses. Some years ago my collection of house plants had increased in size and variety until a better place than the living room windows and a dark cellar seemed necessary; accordingly I built a pit, using as a foundation a disabled cistern which was adjacent to the cellar on the west, consequently the entrance to the pit was made at that point.

Four second-hand show case sashes, each containing six panes of 12x18 glass, were bought complete for $3. These formed most of the south slope of the roof, and were laid upon rafters set at an angle of about 30°; the eastern gable was the house wall, the western gable, and north slope which was about 75°, were boarded up with cheap hemlock lumber, battened and banked over with earth. The foundation of this superstructure consisted of four sills of 4x4 scantling laid upon the ground. A fender was built around the space covered by glass, and all outside of that was covered heavily with autumn leaves, weighted down with brush to exclude frost.

The interior was fitted up with shelves, making a pit of about 6x9 feet, and six feet deep, costing but little more than $5, exclusive of labor. It was so successful a venture that a few years later a small greenhouse was built on the same cheap plan, the old pit was utilized as a furnace pit, and over this the glass roofed building was erected. An excavation was made the desired size, and posts of 4x4 hemlock scantling were driven quite closely along the line of the wall. Some of the posts were mortised into the solid rock, the wall was then covered outside with good, straight slabs, and boarded up inside. The plates were next spiked on, rafters of 1¼x3 inch pine were spiked to the plates and to the 2x4 ridge pole, the verge boards were inch pine boards, eight inches wide, let into the rafters, and projecting three inches over the plates on the outside. The glass was a mixed lot taken from old store fronts, and varied a good deal in size, but it was clear, and mostly double thick. This was butted on the rafters, kept from slipping down, or sidewise, by heavy glazier's points, and secured by strips of 1x¼ inch pine, bored and countersunk, and screwed to the rafters with 1¼ inch screws. Ventilation is secured by means of a hinged window in the western gable, and by elevating the ridge cap, as needed. The walls being filled with earth and banked flush with the verge boards reduces the surface, exposed to outside influence, to a small triangle of gable and the roof, consequently the cost of heating is much reduced.

An old coal heating stove and pipe were used. Paint was used only on the new lumber, the interior walls being whitewashed. All the work was done "at home," which partly accounts for the fact that we built a greenhouse 12x24 feet in size, at a cost of something less than $30, labor and heating apparatus not being counted. It is not a fancifully built structure, but is convenient and serviceable, and will serve the purpose of demonstrating experimentally whether there is money in the business under the present management, quite as well as one costing much more. A house of similar dimensions, built in the usual way, would have cost at least three times as much as we expended for this, and answered our present purpose little, if any, better. It pays to understand one's needs, and take the most direct way to secure them.

Impure Drinking Water. — In securing and maintaining good health, pure water is as needful as wholesome food. Many of the most virulent diseases follow the use of drinking water contaminated by the drainage from cesspools. A well or spring, that for generations past may have afforded an abundance of the purest water, is easily rendered unfit for culinary, or drinking purposes by such impurities. In these cases the owner of the property is unwittingly to blame. Hence, if the privy vault is so located that the drainage from it is liable to find its way into the well or other source of water supply, it should be moved further away, or the vault filled up with fresh lime and earth, and changed to a dry earth closet. In fact, with the dry earth system, no danger need be apprehended from contaminating the water, or atmosphere.

CALLAS IN SUMMER AND WINTER.

C. H. ALLEN.

The Calla, if properly treated, gives more enjoyment in the house, and in the garden, than any other large plant. It will flower during the winter as well as the summer. In fact, it will bloom all the year round if well cared for. To insure success, procure a dry bulb of from one inch to two inches in diameter; place it in a seven-inch pot, have the soil one-half decomposed manure, and one-half loam well mixed; cover the bulb about one inch, wet the soil thoroughly, and place in a shady spot. If the bulbs are started in the summer, plunge the pots into the open ground to within one inch of the top of the pot. It will need no more attention until it has started to grow, then water freely, and before frost comes take the plant into the house, and it will produce many flowers. Occasionally, during the winter, give it a watering with some stimulant, such as a teaspoonful of ammonia to a gallon of water. A dose of this once a week will be very beneficial. It is generally supposed that callas must be dried off and given a rest for several months, but such is not the case. When the plant appears as if it were beginning to dry off (and it will do so after it has been growing in one pot for several months), take it out of the pot, shake off all the old soil, rub off all the young bulbs which have formed around the old one, and treat as before. Water thoroughly once, and then just enough to keep the soil from becoming parched. The old leaves will dry down, and the plant will have a dying appearance, but it will soon start into growth again, and then into bloom. This repotting should be done about June 1st and September 1st; if at the latter date, all the soil should not be shaken off, else it may destroy the roots. All that is needed is simply to remove some of the old soil from around the top of the bulb and replace it with very rich loam. For house culture, the Dwarf Everblooming Calla is especially desirable, as it does not grow as tall as the old variety, and is a much better bloomer. A very beautiful new variety introduced last year is the Gem. This is of a very dwarf habit, growing only ten inches high, and producing flowers only one and one-half inches in diameter.

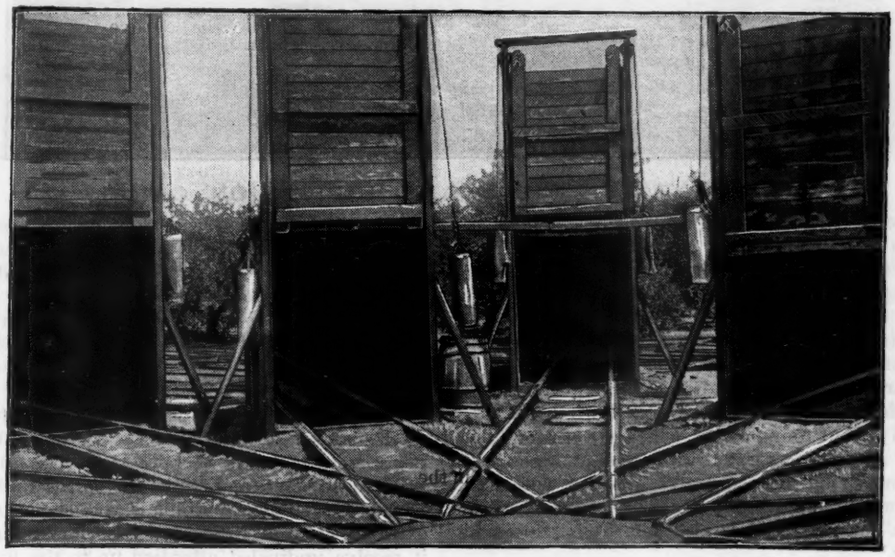
CALLA FLOWERS AND FOLIAGE.

A Threatened Insect Danger. — The larva of a two-winged fly very closely allied to the apple maggot, does great damage to the fruit of the orange in Mexico, by boring into the pulp. The fly is known as *Trypeta lugens*. The larva renders the fruit unfit for eating purposes, and, although fruit dealers in New Orleans are familiar with the grub and its work on the oranges that are brought into that market from Mexico, no reports have yet been received of the insects injuring the growing oranges of Florida. Prof. Riley, of the Agricultural Department, calls attention to the danger of introducing and establishing so formidable a pest to orange culture, and fears that, without precautions, the increase in railroad communication and the spread of railroad systems between the United States and Mexico will be followed by the establishment of this very unwelcome guest in our orange-growing sections.

BLEACHING FRUIT

I. H. FICKEL, CALIFORNIA.

The last few years have witnessed many changes in the preparation of dried fruit, and much advancement has been made. The market now demands an evaporated fruit bleached by sulphur, and so long as the consumer will pay a higher price for the sulphured than for the unsulphured article, the producer will meet the demand. Sliced fruit, exposed to the sun, quickly turns dark. Dr. E. W. Hilgard, of the California experiment station, has shown that this darkening to a light brown, is a practically inevitable result of drying any fruit in contact with the air, whether in sunshine or by artificial heat, and should be looked for by every consumer as the natural mark of an honest article. Dark dried fruit may be bleached to a salable white, by the fumes of sulphur, but this process is then injurious, destroying much of the natural flavor, and adding poisonous sulphuric acid, an antiseptic that impedes digestion, and causes headaches. Most of these injurious effects are avoided by sulphuring the freshly-sliced fruit before drying, as the subsequent evaporation drives off most of the sulphurous acid, and more fruit flavor is retained. [The illustration shows the sulphur boxes and tracks in a drying ground where fruit is dried on an extensive scale.] The boxes are made of rough lumber, and as nearly air-tight as possible to prevent the escape of the fumes. Their size is about six feet wide, ten feet long and six feet high. For convenience the door is hung on wheels and balanced by a bucket filled with rocks. The fruit is placed on trays three by nine feet in size. Twelve or fifteen of these trays, kept apart by lath, are placed on a truck, and run into the box, which is then closed. A hole, large enough to admit a pan containing three or four pounds of sulphur, is dug under one side of the box. The pan containing the sulphur is placed inside, set on fire, and the entrance closed with a board. The fruit is allowed to remain in these fumes from twenty-five to thirty minutes, according to the state of ripeness, the greener fruit requiring the longer period. This completes the bleaching process. The trays are then removed and placed in the sun to dry. Another good method is to have an iron plate, one or two inches in thickness, and large enough to hold three or four pounds of sulphur on its surface; the plate is heated over a fire, placed inside the box, and the sulphur then spread on the plate. As soon as the sulphur comes in contact with the plate, a dense smoke is liberated, which fills the box in a few minutes, and in less time than when ignited. Sulphur fumes and sulphuric acid are poisonous, and if sulphured fruit were eaten as soon as removed from the box, the results might be serious. But it is claimed that



SULPHUR BOXES FOR BLEACHING FRUIT.

as the fruit is evaporated, so also is the sulphuric acid. Every portion of the surface of the sulphur should be burning before putting it under the box. The smaller the amount of sulphur put on at one time, and the more air there is admitted, the fewer will be the visible fumes which carry up sulphur to be deposited on the fruit.

Though sulphured fruit is prohibited by law in Europe, it is useless to offer to American markets any other than a light colored dried fruit for sale, with the anticipation of any profit, and the light color can be obtained only by the sulphuring process. The fruit growers of California are anxious to put upon the market a first-class article of "unsulphured dried fruit" labeled with the statement that it is unsulphured, and retains the natural sweetness and flavor of California fruit, instead of being reduced to a common level with the worst products of every country. They believe that the whitish-green dried apples and pears now selling at very high prices in the grocery stores might just as well have been grown anywhere from Norway to the Mediterranean sea, for aught they contain of the flavor of California fruit. The public should demand healthy, brown, high-flavored fruit.

CANNA, MAD. CROZY.

C. L. ALLEN.

When what are usually known as the Crozy Cannas were introduced, they were supposed to be new hybrids; yet without desiring to belittle the indebtedness to Mons. Crozy, or to detract from the credit he is justly entitled to, facts brought to light recently, show that this popular plant is neither new nor a hybrid. The first intimation as to their being hybrids I had last winter when I noticed that a large number of seedlings from Mad. Crozy came absolutely true to the type, both as regards habit of growth of the plant as well as to the color and markings of the flowers. But I was still more surprised, as well as pleased, a few days since, in looking through a volume of the *Botanical Cabinet*, published in London, England, 1820, by Conrad Loddiges & Sons, in finding a finely colored illustration of this canna, which is described as a species as follows:

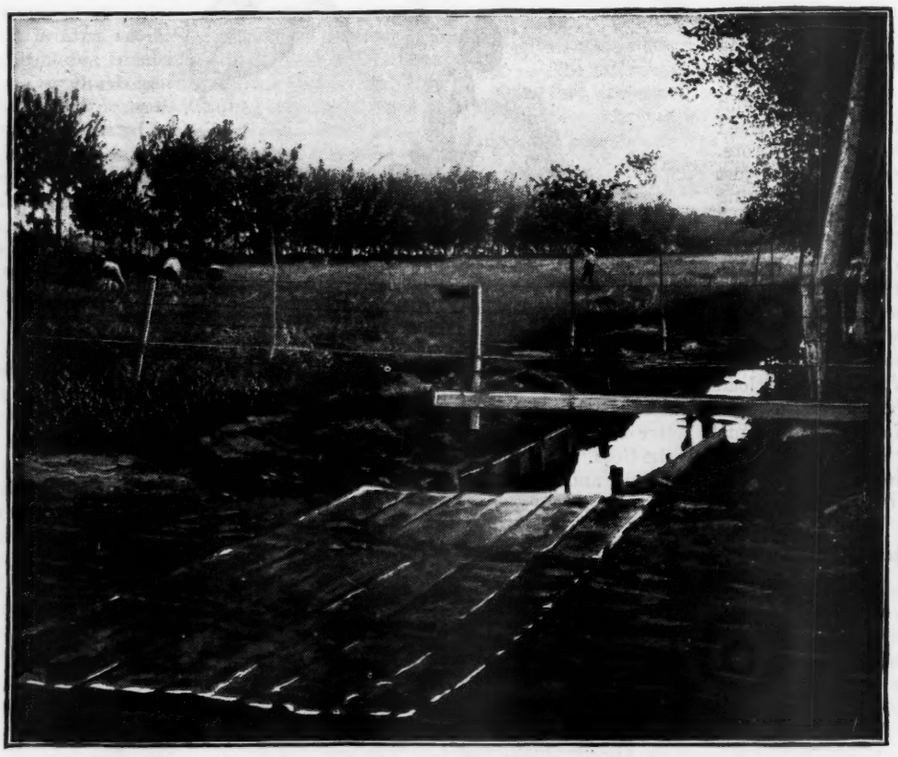


Fig. 1. ALFALFA FIELD AND IRRIGATION CANAL.

"*Canna Aura-Vittata.*—We are obliged to our most liberal friend, Mr. John Sheperd, of the Liverpool garden, for the very fine plant before us; it was named by W. Roscoe, Esq., the excellent founder of the establishment, who has long been celebrated for his extensive botanical knowledge, and his accurate acquaintance with this class in particular. It is a native of Brazil, and grows with us about three feet high, flowering several times during the year; there are usually about four flowers, which are of inimitable brightness, in scarlet and gold color. It must be kept at all times in the stove house, and should have a pretty large pot, with rich, loamy soil, and a plentiful supply of water. The roots admit of occasional separation for increase; it also sometimes ripens its seeds in this country."

A foot note to this description is as follows: "In a communication with which we have been lately favored by Mr. Roscoe, that gentleman has informed us that, although the name *Aura-vittata* was at first suggested, he had afterwards adopted that of *limbata*, which, of course, we should, by all means, wish to retain." By this latter name the species was known and described by Louden, Paxton, and others. It is seemingly strange that so beautiful and useful a plant should have so long been known by name only. It does not detract from the beauty and usefulness of any plant to know that it existed more than seventy years ago, and that it was as greatly admired then as it is now. But it is a satisfcation to know the origin, or habitat of a species, and just how much credit is due the florist for its development.

SPINACH.

Among the small vegetables there is none more important than spinach, or one that can be grown more profitably. Yet it is a sadly neglected luxury, and rarely met in the garden. There is no excuse for this as it can be grown easily, either as a spring, summer, and autumn crop. As it is mostly required for early spring use it should be given a sheltered situation, if the garden affords such. In this respect we cannot always choose, particularly in small gardens where it must be grown as a second crop. Any vacant ground will do, and it should be prepared early in September, by working in deeply a good supply of well-rotted stable manure, and then leveled off as smoothly as possible. After the ground is in readiness the seed should be sown in shallow drills, from twelve to sixteen inches apart. Sow the seed thinly, covering about half an inch, and then firm the ground on the seed by treading down each row with the feet. For an early spring crop the seed should be sown about the tenth of September. As soon as the plants have made a second pair of leaves they should be thinned out to four inches apart; after this all the care they require is good cultivation, which means a frequent use of the hoe, to prevent a crop of weeds. After the ground is lightly frozen, a slight mulch, not quite sufficient to cover the plants should be given. Early in the spring, as soon as the soil is in a fit condition to work, the crop should be thoroughly and deeply worked. In a short time it will be ready for use, and the ground can be cleared and prepared for some other crop. As a field crop cultivation is the same, only the plow and the harrow are substituted for the spade and the rake.

In the garden the seed should be sown wherever there is a vacant spot, and, if the crop is not wanted for the table, there is nothing better in the way of a green crop for a fertilizer.

Farm Exhibits at the County Fair.—Every farmer who possesses good stock or farm produce should show them at the fall fairs. Begin now to make the necessary preparations and selections. With roots, plants and fruits, the spring and summer work should have been well done. Animals to be shown should be selected and extra attention paid them. A superior animal, may not win unless it receive undivided attention up to the final hour of awarding the prizes. Encourage the boys and girls to show their poultry and pets, their flowers and fancy work, or their crops. Overcome the attractions of the race track by displays of fruit, flowers, grain, thoroughbred stock, and other products of home and farm.

AN IDEAL RANCH IN THE SOUTHWEST.

R. S. TARR.

Some of the early pioneers who recognized the prospects of the Arid Region, were cattle-men and they came west when Indians and buffalo were their neighbors. They have had a hard battle to fight but have fought it nobly, and are now in possession of property of great value. One of these pioneers chose a spot a few miles from Roswell, and founded the ideal ranch of the Southwest, the most perfect in arrangement, the most progressive in management of any ranch which it has been my fortune to see.

The prairie through which the Pecos river flows is as level as a floor, and to the east it extends indefinitely across the Pan Handle of Texas to Oklahoma. On the western boundary of this prairie across the Pecos river are the foot hills of the White Mountains, the highest in New Mexico. The water from the rains and snows in these mountains soaking into the ground, pursues an underground course, and, near Roswell, rises to the surface in the form of large permanently flowing springs carrying many cubic feet of the purest spring water. The water of one of these springs is under the control of the Chisum ranch.

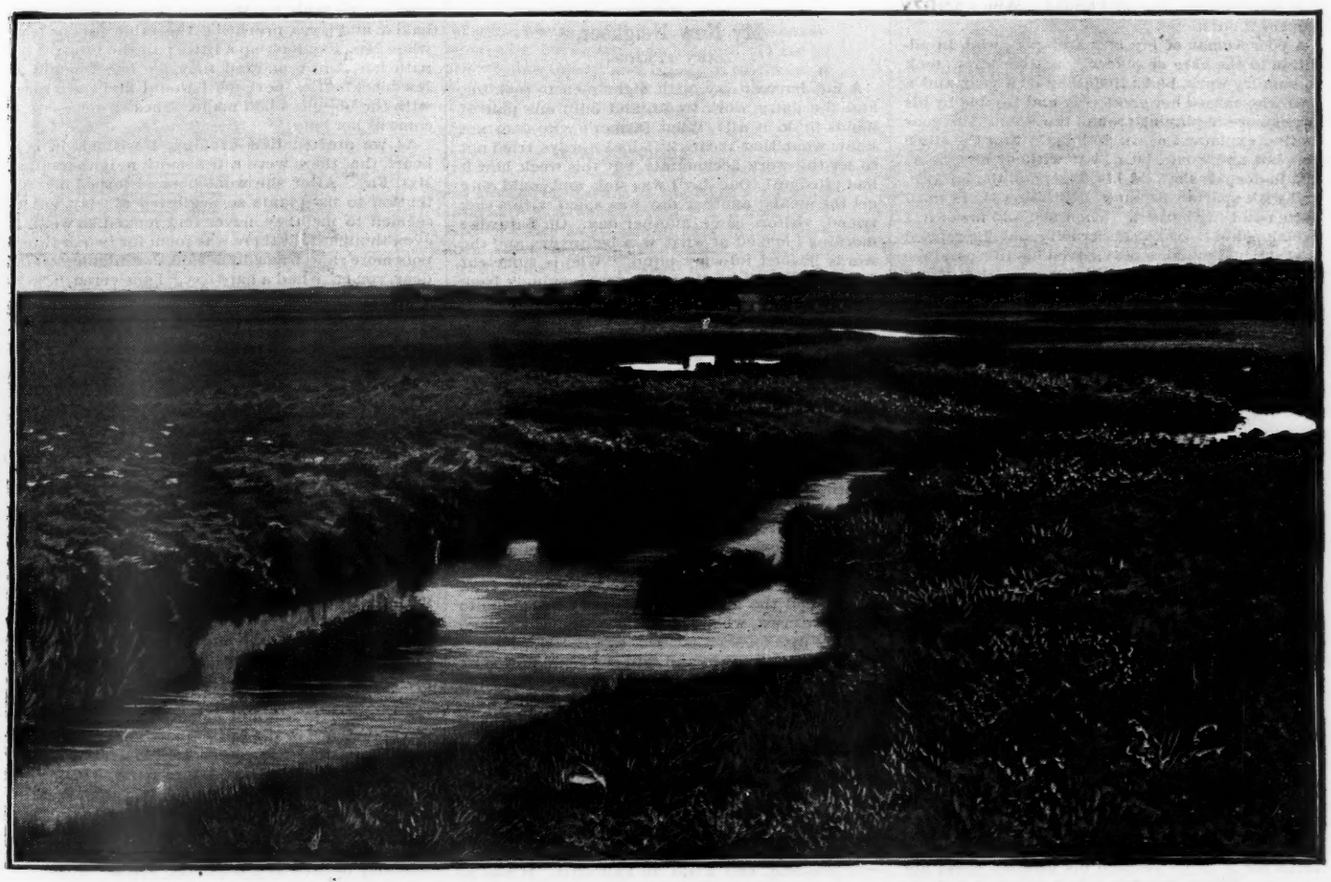


Fig. 2. A PRAIRIE SPRING ON THE CHISUM RANCH.

The Chisum ranch, unlike most of the southwestern ranches, does not believe that cattle, like rattlesnakes, can live all winter without food. Nor does the owner assume that a Longhorn is as good as a Hereford. Instead of scrub cattle with projecting bones and sore hips, a common sight in the Southwest, we find here well kept cattle, often of choice breeds. The bulls are all well bred.

During the summer the cattle are allowed freedom of the range but the material is always at hand to feed those which need feed. One hundred and fifty acres of alfalfa are grown.

There are 1,500 fruit trees, a garden and fields devoted to other products. It is in every sense modern and progressive and is one of of the types of ranch which are often planned, but which unfortunately one rarely sees. Too often the home of the cattle king is a mere wooden shanty surrounded by rocks, sage brush and cactus with no green thing in sight; but the Chisum ranch departs from the type and very nearly approaches the ideal.

[The illustrations herewith were engraved after photographs of this ranch. In Fig. 1 is seen a field of alfalfa on this ranch, in which calves are feeding. It shows also an irrigating canal, with its line of cottonwoods, and on the other side a parallel canal is indicated by the row of cottonwoods. One of the springs in the prairie is depicted in Fig. 2.]

CALIFORNIA PANSIES.

C. R. ORCUTT.

The pansy has truly captured the heart of the American people, and of the inhabitants of all civilized countries, and perhaps no flower is more generally loved and admired. The modern pansy has been produced by horticultural means from the violet or heartsease of Europe, and by continued effort and improvement, has reached the present high state of development and differentiation in form and color. H. Wrede, of Germany, has made a special effort for the improvement of this flower, devoting eighty acres to its culture alone. Last year he sent pansy seed to every civilized country in the world, over $8,000 worth being purchased in the United States. Great results have been attained in California, although on a much smaller scale at the start, but with, so far, very encouraging success, and many new and worthy varieties may be expected as the result of crossing by hand pollination. A single plant will sometimes yield an ounce of seed, sufficient to grow 5,000 new plants, but in the choicer varieties the male flowers often greatly predominate, and only a few pods of seed are matured. The cut flowers are sold at wholesale for two dollars per thousand in California. The choicest seeds are sold by number and, while pansy seed can be bought as low as fifty cents an ounce, the choicest at wholesale readily sells for twenty times that amount.

The new California strain of pansies, when introduced, will tend greatly toward showing the great possibilities of the Golden State as a seed growing center. Already many varieties of seeds are grown more readily, cheaper and of better quality than in the famous seed growing sections of Europe, and the remarkable success with the pansy would indicate that there is practically no limit to the development of this industry. Doubtless the lack of cheap labor on the Pacific coast will prevent the growing of cheap varieties of seeds, or profitable competition in them for many years, but with the natural conditions so favorable we may expect, eventually, to take the lead even in these.

Early Home Training.

ALICE CHITTENDEN.

A lady remarked to me the other day that the development of original sin in her two-year-old boy was something appalling, "and he is such a baby it is impossible to train him yet," said she. This is where many parents make a fatal mistake. At the first dawning of intelligence in a baby he should begin at least to learn that his baby faults react upon himself. If a baby of eight months cries through sheer naughtiness—be sure first that it is naughtiness—then put him in a room where he can cry it out alone.

A poor woman of my acquaintance, who, in addition to the care of several small children, took in laundry work, had a little boy of a year and a half who caused her great fear and trouble by his persistence in playing around the stove. The poor mother explained again and again that the stove was hot and would burn, but without effect. At last in despair she laid his fingers on the hot lids, and with spartan firmness held them there until quite painfully burned. When she told me of it, I exclaimed in horror at her cruelty, but she replied that she had, undoubtedly, saved his life, as, since this harsh lesson, he would not go within many feet of the stove. Children are of such different temperaments and characters that it is absurd to detail set rules for their government. My own baby, when less than a year old, learned that the steam heaters in my apartments were hot, and always gave them a wide berth in passing.

Perhaps the only general rule that will apply is that of honesty. The time-worn adage is never more true than when applied to the training of children. Be perfectly honest with your little ones. If baby cries every time you put on your hat, because he knows you are going to leave him, don't go in the next room to put it on and slip away for fear of his cries. As surely as you do, he will soon begin to cry if you go out of the room, because he will have learned that going out of it has meant a prolonged absence. There is no tyranny like the "pink and white tyranny" of infancy. I have learned by experience that most of my troubles in the management of my children have been caused by my fatal weakness of doing what was easiest at the present moment. When my first child was young I learned some pretty severe lessons on this point. The whimsical little fancies that come into their baby heads are legion. One baby of my acquaintance would only take a drink from his mother's hand, which little whim his fond mother humored until one day a baby sister came, and she saw the evil results of her good nature. Master Jack refused food or drink for 36 hours because his mamma could not give it to him, but, although she begged to have him brought to her, the firm and judicious auntie who had him in charge, would not yield.

If, by the time baby is a year old he has not learned that you mean what you say, and that his loudest screams will not swerve you from your purpose, you have sown the wind and must be prepared to reap the whirlwind. Next to this, and perhaps beside it, comes the lesson of obedience. Only a mother knows how hard it is to make a pretty baby rogue who runs away from his morning bath, shrieking with glee at his own waywardness, come to her at the sound of her voice. His very wilfulness is so pretty that she can hardly keep from clasping him to her and covering him with kisses. But alas! if we mothers yield to any such transports as these, it is to our own undoing. By gentle means, if possible, if not by sterner ones, baby must learn that mamma's word is law. To this end it will be just as well if mamma does not bewilder his infant mind with many laws.

There is another little lesson which baby can learn, as was demonstrated to me at a friend's house. This is to control his feelings, and if he happens to feel cross, to restrain his desire to wreak vengeance on all his faithful subjects. It often happens, as it did in this instance, that baby wakes from his nap in that mood which is popularly supposed to be caused by getting out of the wrong side of the bed. In such cases, the mother's usual mode of procedure is to hush and soothe and to try by various means to divert his mind from his supposed grievance, while baby's usual mode of procedure is to grow more and more exacting. In this case, baby's papa asked the young man, who was not yet 14 months old, if he wanted a drink. Baby shook his head and yelled the louder. "If you don't stop crying," said papa, "you shall go in the kitchen." Baby hesitated a moment, then thought he would risk it and resumed his screaming, upon which papa promptly carried him, high chair and all, to the kitchen. Presently a very much subdued and mollified baby called "Papa" in heart-broken tones, and upon shaking his head "yes," when asked if he would be good, was brought in, somewhat shamefacedly, smiling. At first I remonstrated with this stern papa, but he silenced me by saying, "Babies and husbands should be trained to control and suppress their feelings and not make others miserable every time they are a little out of sorts."

My New Neighbor.

MARY FERRES.

A hot harvest day, with eight men to cook for, and the dairy work to do, and only one pair of hands to do it all! What farmer's wife does not know what that means? I had always tried not to let the work accumulate, but this week how it had piled up! One day I was sick, and could only get the meals; another day was spent with a sick friend, visitors came another day. On Saturday morning I looked at what was before me, and the words flashed into my mind, "Who is sufficient for these things?" My mind went longingly back to the time when little feet ran around the kitchen and little hands were ever ready to do many things that were a great help. But the little feet, grown larger, have walked away to battle with the world, and I am alone to do the best I can.

At the breakfast table I asked my husband to stay in and churn, as I had so much to do, for he is ever ready to help me with the hard work. While John was churning I set my bread to sponge. I like to sponge my bread in the morning in warm weather and bake it at night, for then it is sweeter and better. The butter soon came, and I took care of that. I prepared for pies some pumpkin that had been stewed the day before. Now I thought, if I can get those pies baked and part of the ironing done before dinner, I can easily do the rest. After I had the pumpkin prepared I was going to mold the crust, when I saw a lady from the village driving up.

The visitor came in and said she could not go by without calling to see my flowers. I felt just then that the flower garden and the house plants were a nuisance, and inwardly resolved that I would get rid of them before another summer. I went with the lady over the flower garden and the window plants with the best grace I could, but as we came back into the dining-room I smelt my cake burning, and excused myself to rescue it.

By this it was time to get dinner. I thought I could do some of the ironing while the dinner was cooking, and I did do half of it. It was so warm that when I had the dinner on the table I could not eat anything. After the dinner dishes were washed, the large kitchen and dining-room was to be mopped. The mercury stood in the nineties. When the ironing was done, I was about finished myself.

I had hardly sat down to rest when a neighbor's little girl came running in, saying, "Oh! please come over quick, Fred has cut his foot so deep that mamma is scared." The pumpkin pies were forgotten, as I went in haste to see what I could do for Fred. The cut was bound up, and after I got my breath I went home only to find the fire gone out and the bread sponge running over on the floor. Well, the bread was kneaded and set to rise again, the fire started, and the dough cleaned off the floor. It was getting towards tea time, but those pies must be made. Every housekeeper knows that pumpkin sauce prepared for pies will not keep over night, and as the next day was Sunday, I could not make them then. Now I thought if I have to put that pan of pumpkin into the pig's pail, John will see it and will say, "Well, wife, you undertook more than you could accomplish to-day, I think." Now, if there is anything that annoys me it is to be told that I undertook more than I could accomplish.

I had a little time yet, so I started with a will to mold the crust, when I looked out of the window and saw Mrs. Fay coming up the lane, a lady who had recently moved into the neighborhood. I remembered, to my dismay, that she told me the Sunday before that she would take tea with me one day that week. Now, if the thermometer was up in the nineties, my courage was below zero. Tears came to my eyes, and through them I saw a vision of twenty chickens' heads in that pan of pumpkin. As I met Mrs. Fay at the door she took my hand, and exclaimed, "How tired you look! Perhaps I was not wise to come to-day, but I can help you." This she said in such a cheery voice as she took off her hat, for I was so dazed I had not asked her even to sit down.

"Oh! you are making pumpkin pies. Well, I am an adept at pie making. I made all the pies at home; mother said I could do them better than the other girls. Now, you mold the bread and I will do the pies." All this she said before I had a chance to say a word, and as I molded the biscuits and bread, a sense of relief crept over me as I saw pie after pie disappear into the oven. The supper was on the table for the men, the pies and bread baked, and I was preparing the table for our tea, when Mrs. Fay took up a little pail she brought in with her, and remarked that she had brought a few blackberries, perhaps I would find them nice with the biscuits I had made. These were as welcome as her help.

As we ate tea that evening, I wished, in my heart, that there were a few more neighbors like Mrs. Fay. After she went home, I turned my attention to my plants so neglected all day, but it seemed to me they never had looked so well. I even thought that there was room for two or three pots more; and when John said that night, "Well, dear, you have had a hard day," I answered, "No."

How to Renovate Wall Paper.

MRS. E. M. PLEASANTON.

In cleansing wall paper, first remove all the grease spots by placing folds of blotting paper over them and ironing with a moderately warm iron, after which brush all the dust from the paper, and clean and brighten it with fuller's earth, mixed with water, to form a hard paste. It must be hard enough to handle, like bread dough. To clean the paper, take a small lump of the clay, and, commencing at the top of the room, wipe it lightly downward, about half a yard at each stroke, till the upper part of the paper is clean, then around again, with the same sweeping stroke, always commencing each successive course a little higher than the upper stroke had extended, until the walls are finished. This operation, if carefully performed, will make old paper as bright as new. Great caution must be used, however, not to rub the paper too hard, or to attempt cleaning it horizontally. The soiled part of the fuller's earth must be cut off each time, and the pieces renewed as often as necessary. To improve the torn parts, which usually occur near the bottom, buy some ingrain paper, which comes in all shades and is of one color, to match the predominating shade in the wall paper. This paper is almost a yard wide, and may be used as a dado, full width. A narrow border in metallic green and silver, or some other desirable molding, should be used to divide it from the upper wall.

Woman's Pet Virtue.

PALMETTA MONTCLAIR.

Some writer has called economy woman's pet virtue. However that may be, "there is a limit at which economy ceases to be a virtue," to slightly alter Burke. The economical woman is very apt to overdo the thing. I know a lady, who at the age of forty, with three young daughters, who never needed her as much as they do now, is a helpless invalid from paralysis. "She has worked so hard in her lifetime," said a friend speaking of her. "She has never had more than the most meagre income to live on, but she has been the most faithful mother. Her girls have always looked just as well as anybody's children and when she has gone away for a rest in the summer she always took her machine with her and sewed all the time. She made fifteen dresses once in a three week's vacation."

"The most faithful mother!" Ah, mothers! is it being faithful to work so hard to clothe the bodies of your children that you have no time for their

minds—that you not only wreck your health, but that you imperil your life? Is it being faithful or even economical to do your own washing or housecleaning when you have not the strength? I think you all know in your inmost souls that it is not. I have heard of a woman who died, and her grief-stricken husband hoped there were cobwebs and dust in heaven because poor Jane would not be happy unless there were. Never mind whether your children look as well as other people's or not. Let them wear gingham dresses of the darkest and plainest, with not a tuck or ruffle on their aprons, but preserve your own health and self-respect as well as their love and respect, for if they always see you ill-dressed and working as hard as you can drudge, they will soon think of you only in the light of a drudge.

A little five-year-old boy of my acquaintance, whose mother was one of these "faithful" ones, always hard at work, wearing the same calico dress from Monday morning until Saturday night, with the sleeves tucked up and never a sign of brooch or ribbon at her throat, once went to visit his mother's sister who was also a farmer's wife.

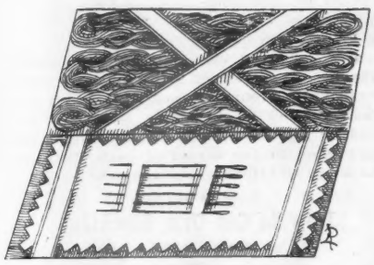


FIG. 1. THE CASE OPEN.

When he came home his childish criticism worked a change in that mother's life. "Mamma," said he, "why don't you put on a pretty calico in the afternoon and wear a blue ribbon like Aunt Mary?" Remember, mothers, that the children for whom you work the hardest are your most severe critics.

Darning Case.

LENA J. RINGUEBERG.

The material for the outside of this case, shown in the accompanying illustrations, is light grey or ecru linen, suitable for painting. The lining is brown surah silk, three-fourths of a yard of satin or grosgrain ribbon, four colors in darning cot-

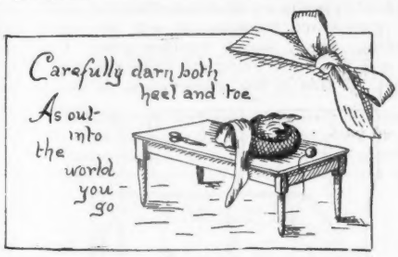


FIG. 2. OUTSIDE OF CASE.

ton, a piece of flannel and half a dozen darning needles (Fig. 1). Cut two pieces of heavy cardboard six and one-half inches long by three and one-half inches wide. Paint the design and lettering in sepia on the linen cover (Fig. 2) before sewing together and if you like, paint some scroll on the other piece; then cover both pieces of cardboard with the silk and linen, sewing the edges over and over, inserting the ribbons at the same time. The ribbons, which cross each other, are fastened with one end of each to one card, and the other ends to the opposite side of the other card.

The ribbons which cross straight over are fastened in a reverse manner making the case so that it can be opened from either side.

The edge is simply cut in points or can be buttonholed. The cotton is cut in suitable lengths and braided.

Make a bow of ribbon for the outside to finish the case.

How to Utilize Old Carpets.

MRS. E. M. LUCAS.

When looking over the old sitting-room carpet, a bright thought occurred to me. This carpet had been "once upon a time" a good body Brussels. I found that although the warp was worn the weft was not. I had it thoroughly scrubbed with hot suds and hung out to dry. When dry, it was stretched tightly and nailed on the kitchen floor, wrong side up. It was then treated to a coat of size, made by glue dissolved and boiled in water.

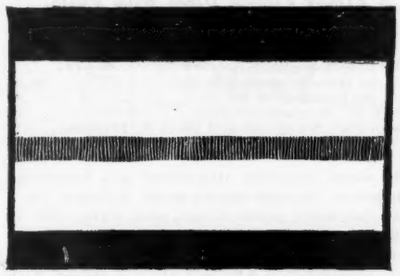


FIG. 1. THE THREADS DRAWN OUT.

When the size was dry, a coat of paint was applied, and after this was thoroughly dry a second coat of paint was given. I have now a floor covering equal to, if not better than, oilcloth. It can be washed without injury, and is soft to the feet. If the carpet is not sized first, it will absorb too much paint, and it will not be waterproof.

Hem-stitching.

Draw out eleven threads of the warp six inches from the bottom, as shown in Fig. 1, and turn down the bottom twice as in an ordinary hem. Baste this firmly just below the drawn-work and using a fine needle and thread proceed as follows: Pick up eleven of the fine threads or one-sixteenth of

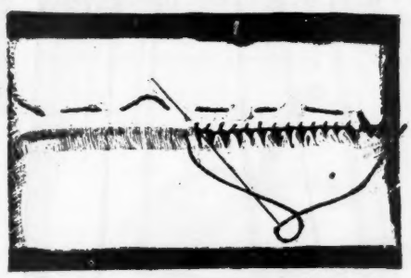


FIG. 2. THE STITCH.

an inch, draw the needle and thread all the way through. Place the needle exactly where you did before, as seen in Fig. 2, under the same eleven threads and at the same time through the triple edge of the muslin and draw it through the second time very tight. Repeat this double motion on every eleven threads.

Birds and Grasses.

DORA HARVEY VROOMAN.

The pretty design, shown in the accompanying engraving, is suitable for embroidery in crewels

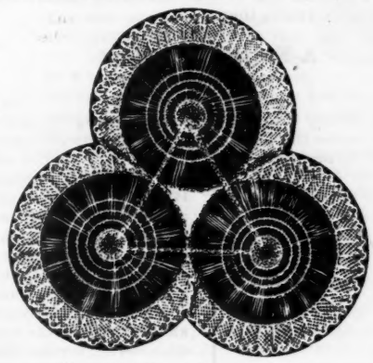
A NEAT BIT OF EMBROIDERY.

or floss. It would make an artistic center for a baby's afghan, or end of a table scarf. The grasses should be embroidered in delicate greens and browns. The birds may be of dark browns, or brown and blue, or brown and yellow.

This design would also answer for a decoration on the back of a blotter, book cover, calendar, or photograph case. It would look very effective painted either in water or oil colors on satin, chamois or celluloid.

Ribbon Tidy.

A very dainty tidy is formed of rosettes made of the three shades of ribbon, and will require one-half yard, two and one-half inches in width, for each rosette. To make the rosettes, sew the ends of the ribbon together, run a thread around one edge, draw it up closely in the center, join the three, and sew the tinsel on each as seen in the accompanying engraving. The centers are about the size of a half dollar. The tinsel rope, which forms the triangle, is made of four thicknesses of the tinsel twisted together. The lace is overhanded on the edge, and the opening in the middle is left so it can be slipped over the top of a chair, two rosettes falling in front and one on the back, or it

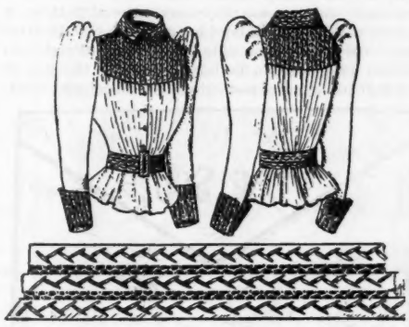


A HANDSOME TIDY.

can be turned around so that it will appear like a different tidy. Naturally, a plain black and white illustrated can give but a faint idea of the attractive appearance of this tidy with its lovely shades of pink, blue and green, glittering with gold and silver tinsel and outlined with creamy lace.

Tape Trimming.

The accompanying engraving illustrates one of the prettiest and cheapest homemade trimmings and is particularly adapted for gingham and other wash dresses. The waist herein illustrated is made of blue gingham, the tape trimming being



PRETTY TAPE TRIMMING.

made by first folding strips of the gingham together, forming bands one quarter of an inch wide until you have enough to cut a yoke. After cutting out the yoke, the bands were caught together with a cat-stitch done with number eight cotton. The feather-stitching on the bands was done with the same, the collar and cuffs were cut from tape trimming only one-sixteenth of an inch wide. A quarter-inch width line tape was used in the same manner as the gingham for a dress made of white linen. It is also very pretty for underclothes as it laundries well.

Things That are Worth Knowing.

A two-inch crack left in the lower sash of a window helps much in keeping the room clear of flies. Screen all of the windows but one, and before the open crack of this, on a stand of just the right height, place a row of plants, with thick foliage The foraging flies, with their persistent inquisitive-

ness, will crawl through the network of leaves, then out of the crack into the sunshine outside, and but few find their way back through the aperture.

It is unwise economy making use of rancid butter, burned lard, soggy bread and cake, and material badly damaged in any way, in your cooking; for "tainted blood will tell," and so will the miserable, clammy, soured, addled ingredients you smuggle into cake and toast and pudding, believing you are saving, when, in fact, you are spoiling whatever wholesome material you may have added to the tainted compound.

A large steel knitting needle is best for cleansing the rubber tubing of a nursing bottle, since the little brushes sold for this purpose soon break and loosen from their twist of wire, leaving minute, stabbing bristles inside the tube, liable to find their way into baby's throat. Pass the needle through the tube, and then with thumb and finger work the rubber firmly about it until every particle of curd is scoured from the tubing.

Beets keep best through the winter months when they are put in bins or barrels, and dry sand sifted thoroughly among them.

A Kodak Picture Case.

ISABEL GORDON.

The dainty little picture case [illustrated herewith] is just the thing to give to some friend interested in amateur photography. Use a piece of pale gray lansdowne 14x7 inches. Three and a half inches from one end cut a point in envelope fashion. Take a piece of pink india silk and one of crinoline of exactly the same shape and size as the lansdowne; lay the silk next to the lansdowne and the crinoline on top, stitch around all sides except the straight edge *a*. Turn inside out and you will find the crinoline between the other materials. Blind stitch end *a* very carefully with gray silk; bring the corners together *b* to *b* and *c* to *c* on the pink side, and sew neatly together. Paint on the flap of the envelope in gray letters "Snap Shots," and scatter over it, in the same color, some tiny conventional pattern, a spider web, or the daisy idea given in the illustration. On the address side of envelope sketch two circles suggesting a kodak picture, in the one at the left paint in softest coloring a sweet girl head,

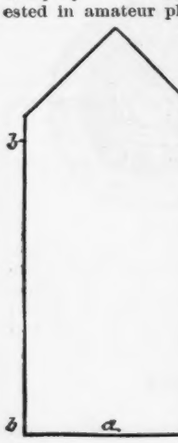


FIG. 1. THE PATTERN.

FIG. 2. THE PHOTOGRAPH CASE COMPLETE.

and in the other an indistinct gray blur. Around it in quaint script run this cute little verse,

"'I'll take her picture', cried the lad
'With instantaneous shot,'
And here is what he thought he had,
But this is what he got."

Burlap for Carpet Lining.

I don't like straw to put under carpets, for it will lie in cushiony, stumbling little lumps on the floor, hard as you try to spread it evenly, and doubles the dirty work when a carpet is taken up. If you cannot obtain carpet paper (which is sold by the pound, like sheathing paper, and is seamed with little grooves, in which the dust settles), use burlap for carpet lining. Secure empty shorts bags —phosphate bags will do if thoroughly cleansed—cut open, and baste in breadths to fit the floor. It is well to overcast the raw edges, to prevent ready raveling. The dust sifts through this lining to the floor, and the heaviest grind of wear and dirt comes on the burlap, and not on the carpet.

A Pretty French Dress with Puffs.

CONSTANCE B. WHITE.

The materials required and their cost are:

2 yds. of sheer nainsook at 50c,.....	$1.00
3 yds. embroidery at 20c,.....	.60
1 spool No. 24 crochet cotton,.....	.08
1 spool each No. 80, 100 and 150 O. N. T. cotton,....	.12
	$1.80

The dress herewith illustrated is a handsome example of French needle-work suitable for a little girl three years of age, and while easy to make, great care must be used to have all the parts exactly in their right places. The yoke is made separately of a square piece of muslin with

FIG. 1. THE DRESS COMPLETE.

alternate rows of pin tucks and feather-stitching. When finished, the work must be four and one-half inches deep and four inches wide. Cut from the top of a twenty-eight inch length of nainsook a rectangle which shall be four inches deep and twenty-eight inches wide. Turn in one-fourth of an inch and gather three rows one-fourth of an inch apart as illustrated in Fig. 1. Sew this firmly to the yoke and hem down the straight edges at the side, leaving three-quarters of an inch margin on the yoke, or in other words the cross-band of shirring must measure five and one-half inches, and thus form one solid piece before it is cut. Next, cut just like an ordinary day-slip, ten inches across the chest and eleven in the neck. Place a gathered ruffle of fine embroidery around the neck and sleeves, the latter being first gathered to a flat band and feather-stitched. Also flat bands of embroidery under the first row of shirring and over the shoulders as illustrated. Next put in the sleeves with a few gathers at top, and outside

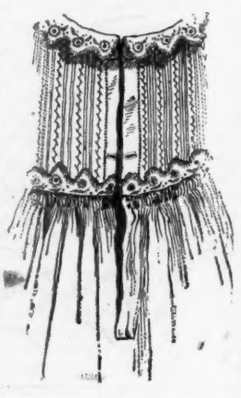


FIG. 2. THE BACK.

a full ruffle of embroidery, around the arm-size. The shoulder-puff is the exact width of the dress under the arm and two inches halfway up, or six inches from the beginning as the entire length of puff is twenty-two inches with most of the fullness at the top. The widest part is of course at the top where it measures six inches, allowing one-half inch of this on the right-hand side of dotted line, as shown in Fig. 3. Gather this three times on each side like the cross-band having the drawing-string one-fourth of an inch apart and sew firmly over each row after which it is to have three rows of feather-stitching on top of the shirring. The back, shown in Fig. 2, is exactly like the front with the exception of the hem-stitched hem, and the width of each side which measures two and one-half inches. A three-inch hem around the bottom, three tucks, one-fourth of inch wide, and a row of circular feather-stitching, the wings of which should be alternately double and single, and a French knot in the center of each, then three tucks above and the dress is completed.

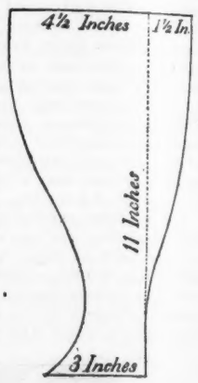


FIG. 3. THE SLEEVE.

How to Cut Over Stockings.

EMMA MACK.

"Take care of the pennies, and the pounds will take care of themselves," is a good old Scotch proverb, and one good way to save the pennies was shown in a former number of the AMERICAN AGRICULTURIST under the above heading. Here are three additional ways in which the same work may be done. Where one way will not answer, another probably will. In Fig. 1 is shown a way to make a new pair for a child of six or eight years, so that there is no irritating seam at the side of the foot. The sketch explains itself to one who is an adept at "making over," *a a* being the top of the stocking, *b b* the heel, and *c c* the under side of the toe, *o o* the fold or front "from top to toe." The points *c c* must be a seam wider than one-half the point *o*. Back-stitch from *c c* to *a a*. Then the seam at *c c* is pressed open and placed opposite *o* and stitched across. If done on a chain-stitch machine, it will be elastic and strong. Fig. 2. shows another plan. Cut from *a a* to *x x*, *o x x* being cut from the top of old foot. If this is too much worn, it can be cut

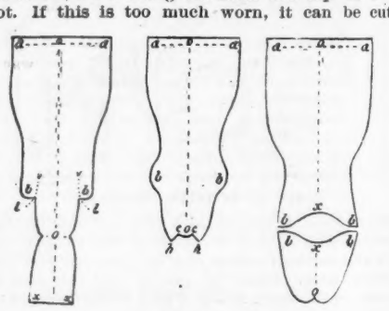


FIG. 2. FIG. 1. FIG. 3.
STOCKING PATTERNS.

across at *o*, and *o x x* can be cut from another piece. Then cut from *l l* on the dotted line to *v v*. From *o* to *v v* is the length of the top of the foot. Sew from *l l* to *a a*; then fold over *x x* to *v v* at *o* and stitch up, after which sew the end of sole to the heel, and it is done. Fig. 3, although not so good a shape as the former can be cut from those too much worn for the others, and is more easily made. Sew from *b b* to *a a*; then sew up the foot from *o* to *b b*, and turn right side out and place *x* on foot to *x* on leg and stitch from *b b* to *b b*. The seam comes across the instep, but in soft goods is not uncomfortable.

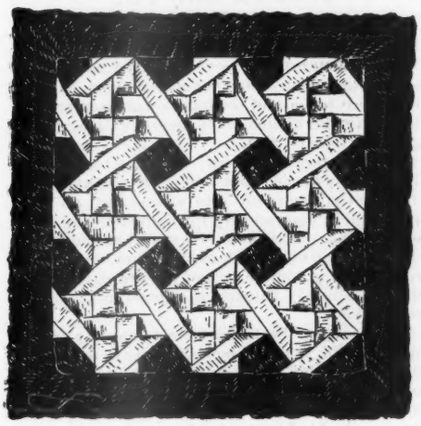
How to Polish a Stove.

"Women generally work twice as hard as necessary over blacking a stove," said a lady whom we

found one day engaged in that unromantic occupation. She had on a pair of stout leather gloves and was applying the blacking with the round part of an ordinary shoe-brush, which she said was lighter and therefore much more easily wielded than the usual stove-brush. The other side of the brush she used in polishing with light, even strokes like an expert bootblack. "I always keep soft paper bags from the groceries tucked in this box nailed up near the stove and every day I slip two or three over my gloved hand and give it a rub; the consequence is that I only need apply polish once a week." Another little thing worth remembering in regard to stove cleaning is to wipe the dust from the stove thoroughly before you apply any polish. There is always a right and a wrong way to do a thing and the wrong way doubles the task.

Ribbon Work.

The accompanying engraving illustrates how ribbon work can be made into cushions for chair



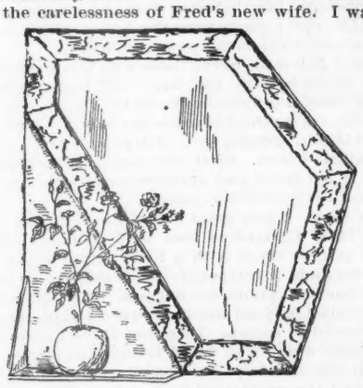
CUSHION COVER OF RIBBON WORK.

seats or sofa pillows. The same pattern can be used for Hercules braid for chairs. To weave the ribbon, pin it on an ironing board or heavy table cloth. The silk lining should be a trifle larger to allow it to puff up between the ribbon in the open spaces. The ribbon is tacked to keep it in place. The cushion shown in the illustration herewith has a full puff of the silk gathered around it.

Utilizing a Broken Mirror.

J. C. G. SMITH.

It was only a broken mirror, but it belonged to the guest room and Mother Brown was coming the next day and I did not want her to comment on the carelessness of Fred's new wife. I was a



A PRETTY ORNAMENT.

good half day's journey from any place where I could get a new mirror, in short, I was discovering that a bit of broken glass was capable of giving me considerable uneasiness. A nephew of Fred's who was visiting us and saw my trouble said "Give me the biggest piece, Auntie, and let me see what I can make of it." What he did make of it was no more than any boy who has any skill in handling tools can do again. He first made a four inch, flat, pine frame; it was unplaned, and the groove that held the glass was roughly gouged out with chisel and jack-knife but the frame was curiously ornamented with mosses, lichens and mossy bits of bark glued on and so arranged that none of the wood was visible. At the bottom where the glass ran almost to an angle he had placed a narrow shelf with a thin board at the back; this board and the edges of the shelf were covered like the frame with bark and mosses while the shelf was stained with a walnut stain.

FIG. 1. CLOTH LETTERS FOR SUN MARKING.

I fastened this over my dressing table which was made of a box; placed my one treasure, a cut-glass rose bowl, on it filled with wild roses and the effect was so charming that Mother Brown paid me more than one pretty compliment on my taste.

Curious Things From Orchard and Garden.

S. YATES.

If any boy or girl desires to make a unique and very acceptable present to a friend he or she can do so by following the accompanying instructions, and besides will derive great pleasure in preparing the gift. It consists in imprinting any name chosen upon the skin of apples, pears or vegetables.

Select any strong-woven, dark woolen cloth; cut letters from it about three quarters of an inch square; when you have enough to form the name, paste them in the proper order on some thin, tough paper; when dry take strong white linen thread and connect the tops of the letters together by sewing through them, as shown in Fig. 1, leaving the ends long enough to reach around the article to which it is to be attached. These ends should have short strings connecting the tying cords

FIG. 2. SUN-LETTERED APPLE.

being longer as you recede from the name, for an apple, the last one being an inch and a half in length. When the fruit is quite fully grown select a smooth, fair, healthy looking apple from the south side of the tree, and tie the name portion on the side facing the sun, and in a few weeks the portion of the skin underneath the letters will have bleached to a very light shade. Of course you will have soaked off the paper on the back previous to tying in position. A late keeping apple should be chosen, and a red variety is pref-

FIG. 3. INSCRIPTION ON WATERMELON.

erable. How it will appear when the cloth letters are removed is shown in Fig. 2.

When desiring to imprint a melon, pumpkin, or other vegetable, larger letters can be used and more of them, as in Fig. 3. Instead of letters the year may be imprinted, or any plain design, like a pair of half open scissors, hammer, etc., being careful to tie the strings firmly, and in case of fruit, choose a specimen that will not be touched by another or where an adjoining twig will not change the position of the lettering, even if you are compelled to cut away some small branches.

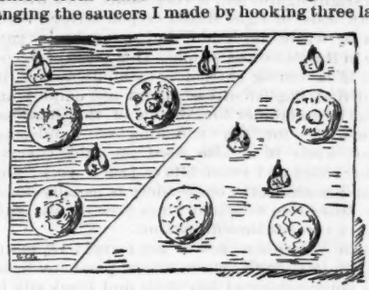
A full-grown cucumber in a small-necked bottle is a curiosity easily obtained; you simply select a healthy-looking small cucumber, place it in the bottle which is laid by the side of the growing vine, and when grown so as to nearly fill the bottle cut the stem. Fill the bottle with alcohol, firmly cork and seal, and you have something to show to your friends for many years, as seen in Fig. 4. Two red peppers may also be fully grown in a bottle. In this case you have to tie the bottle to a stake driven close to the pepper plant, placing a bit of cloth over the mouth of the bottle to keep out as much rain as possible. It is best to remove nearly all the remaining peppers and cucumbers from the plant, that a well developed specimen may grow in the bottle.

FIG. 4. CUCUMBER GROWN IN A BOTTLE.

For Cups and Saucers.

G. C. GOLDSMITH.

One of the gifts received on my recent birthday was a set of six cups and saucers of Japanese ware, some in red and white with the birds and butterflies in deep blues, that are so affected by Japanese designers, and some in a ware that shades from a cloudy blue-white, into grey-blue and deep blue. They were a joy to behold, but I live in the country and could not step out and buy a suitable little cabinet on which to display them, and there was no question of tucking them away into a china closet. A bright idea seized me at sight of a thin panel of wood on which a dress pattern had been rolled when it was sent home. I rummaged my piece bag until I found a remnant of gray-blue plush, and another of dull old gold; with these I covered the board, one half with each color, placing them diagonally as shown in the illustration. Six little brass screw hooks were inserted irregularly, but so that three were backed by the blue, and three by the gold. I hung the red cups against the former and the blue against the latter, arranging the saucer under each, suspended plaque-fashion from brass hooks. An arrangement for hanging the saucers I made by hooking three large



FOR CUPS AND SAUCERS.

dress hooks about the edge of the saucers with a net-work of picture wire behind and a hook to hang by. Truly "Necessity is the mother of invention."

Tomatoes in Many Styles.

Before that healthful and delicious vegetable, the tomato, has succumbed to the frost, make as much use of it as possible. There are many varieties of easily made tomato soup. A cup of baked beans, a ham bone, an onion, a quart of water and a pint of tomatoes cooked together for an hour, strained through a sieve, seasoned, and returned to the fire while a well beaten egg is added, is a delightful soup and one quickly prepared. Then there is tomato and onion soup, with or without stock; tomato and rice soup in which the plain boiled rice may be put in the tureen and the soup

poured over, or the rice may be boiled in the soup. A tomato cream requires a pint of cooked tomatoes, a cupful of boiling water and when these come to a boil stir in a scant third of a teaspoonful of baking soda. When bubbling ceases add a quart of hot milk, butter, pepper and salt. A gill of cream is a great improvement.

A thick tomato sauce is nice poured over boiled macaroni or rice or over toasted bread or crackers. Tomatoes broiled whole or in slices make the nicest kind of a breakfast dish. Tomatoes cut in thick slices and fried are a meal in themselves. After the fried slices are taken out of the pan stir in a tablespoonful of flour, and for a large dishful, a pint of hot milk or half milk and half cream; season and pour over the tomatoes.

Tomatoes cut in dice may be added raw to an omelet just before folding, or you can pour a thick tomato sauce around an omelet made with or without two tablespoonfuls of minced boiled ham spread on when ready to fold.

The French bake tomatoes, first peeling them by immersion in boiling water, then laying in a bake dish with butter, pepper and salt and basting with melted butter. Cook half an hour, dish and pour a thick tomato sauce around.

You may also cut off the tops, take out the pulp, strain to remove the seeds and fill with a forcemeat made of the pulp, crumbs and seasoning; replace the tops and bake for three-quarters of an hour. They are filled with various forcemeats by various nations. The Italians use minced mushrooms, chicken livers and shallots. The Sicilians mince ham, add parsley and shallots fried in oil, wine, the tomato pulp, crumbs and grated cheese. In the South they are filled with rice stewed in broth. Sometimes onions, and mixed herbs are used with the bread stuffing, but in any way they are delightful.

A nice dish of escalloped tomatoes requires a baking dish thickly strewn with crumbs; on this place a layer of sliced tomatoes, butter, pepper and salt by way of seasoning, more crumbs and so on until the dish is full. A little tomato sauce or broth or gravy of any kind may be poured over each layer.

Fashion Jottings.

The blazer suits of flannel and storm serge blazed so fiercely throughout the early summer, that they were bound to be soon superseded by something else and that something proved to be the Eton jackets, short and natty, with pointed back and wide revers. These are now worn, the same as the blazers, with a bell skirt, bodice and blouse; but later, vests of velvet or bengaline will be set in so that this serviceable suit, *par excellence*, may do duty all the fall and, it maybe, into the winter. The Eton coat is particularly becoming to slight figures and is very smart worn over a Russian waist of light tinted crépon striped with bands of white insertion and wrought in gay colors in Russian cross stitch. This style of decoration is becoming extremely fashionable, and it is said that English dressmakers are employing women to embroider long bands of this Russian needle-work for the trimming of handsome dresses, while it is also used on table-covers, slumber robes and other bits of fancy work. On smooth materials, the embroidery is usually done in the Muscovite reds and blues over canvas and the linen threads then drawn out.

Stylish afternoon gowns are formed of plain cloth, trimmed with velvet, silk or passementerie and a combination of tan cloth and black silk is considered the very height of the mode, while Russian velours is another fabric that promises to be quite popular this autumn. Inch-wide ribbons and velvets will still be much used as garnitures for wool skirts, and a novel and economical French fashion is a bias fold of the dress material encasing a roll of wadding. This forms a large cording and is set on between two flat bias folds. Another more elegant trimming consists of three inch-wide velvet bands or bias silk folds separated by two rows of galloon broché which has the subdued, rich coloring seen in Cashmere shawls.

"What shadows we are and what shadows we pursue!" exclaims the Poet, and it is now the truth in a peculiarly realistic sense; for we have "shadow dances" to delight the gay multitude; "shadow curtains"—merely a new name for the Japanese bamboo portieres—and shadow silks and shadow ribbons, namely those of the palest of pale tints which it is the fashion of the hour to call "the shadow of pink, the shadow of green," etc. Parisians are displaying such a fancy for Scotch plaids that they will certainly be much in vogue here the coming season, especially the silks which are speckled as well as cross-barred and which are already made up into shirt waists and used in combination with crépon and cheviot. These and the plaid wools will likely be made up on the straight, but for checked and striped fabrics and for the new moiré bengaline in large waved patterns, the fad is to cut them entirely on the cross so as to show the stripes slantways. Sleeves will continue largely in the Neapolitan style, loose and full at the top and clinging below the elbow.

Velveteen for skirt binding is coming more and more into favor as it outwears three braids and does not rub the shoes. All colors may be purchased at city shops, prepared for the purpose in narrow bias bands or attached to a facing of rubber cloth that protects the bottom of the dress from dampness.

Lace plays an important part on many a fine gown, and old lace is positively the rage. Happy the girl, then, who from grandmother's treasures can rummage out some antique specimens of the "woven wind," as Brussels, Alençon, point, or Italian guipure, and can beg them for her own. No matter how rusty it may be! the yellower the better and she can adorn her best evening frock in right royal style with, perhaps, a pelerine falling from the shoulders *a la Louis Quatorze* or arranged in long spikes as in the time of *Louis Quinze*. Indeed modern laces are being colored to resemble those cream-laid by Age.

A mellow September day when the "fruit scented hand of autumn" wafts the odors of the orchard through pleasant country lanes is the time of all others for a spin on horseback and for the benefit of equestriennes it may be well to mention, before closing, the comfortable changes that have been made in riding-habits. No longer need they groan over the warmth of heavy padded bodices for tailors are now making a special style of Surah silk blouse that exactly matches the color of the habit skirt and is well lined and boned. A gathering at the collar gives the fullness in front and meeting pleats do the same at the back, leaving the shoulders smooth while straps from the sides point up and down above and below the waist line. Close cuffs finish the coat sleeves and a turned-over collar or high straight band does the same at the neck. When the weather is cool a covert-coat fashioned of regular "coating" is added. Sailor hats, too, now often replace the customary beaver.

September Sauces.

Chili Sauce: A most acceptable winter appetizer is made from eight quarts of ripe, red tomatoes a pint of small white onions, a pint of small red peppers which must also be fresh, a pound of brown sugar, three pints of vinegar, half an ounce each of ground cloves and cinnamon, four ounces of salt and a quarter of an ounce each of ginger and mace. Peel the tomatoes by dropping into boiling water and rubbing the skins off; chop them and peel and chop the onions; chop the peppers; tie the spices in little cheese cloth bags and boil all together for three hours. When ready to take from the fire remove the bags of spice; wet a tablespoonful each of ground white ginger and mustard and a teaspoonful of cayenne pepper with a little of the sauce, stir it in and add more salt if necessary. This may be bottled in any wide-mouthed pickle bottles but it is much easier to use self-sealing pint jars with porcelain-lined tops.

A very nice sauce that can be made without boiling is as follows: Take two quarts of ripe tomatoes, two white onions, two sweet green peppers, one quart of the best cider vinegar, one cup of sugar, six teaspoonfuls of salt and four each of allspice, cloves and cinnamon. Chop tomatoes, onions and peppers fine and mix thoroughly with the other ingredients. Seal in air-tight jars, keep in a cool dark place and there will be no danger of fermenting.

Tomato Catsup: Peel and chop a peck of ripe tomatoes; cook until soft enough to rub through a sieve, using a porcelain-lined kettle; put through a sieve, assisting the process with a potato masher; add four tablespoonfuls each of salt and mustard mixing the latter with a cupful of the best cider vinegar; cloves, mace, allspice and ground white pepper, two tablespoonfuls each, and one level teaspoonful of red pepper; boil these ingredients for an hour or until very thick; put up in catsup bottles taking the precaution to heat these in water; cork and seal.

Cucumber Catsup: This is the recipe used at the New York Cooking School. Peel twelve fine large cucumbers and chop very fine; add an equal measure of finely chopped onions; four large green peppers, first removing the seeds; four shallots and a bulb of garlic; grate a medium sized root of horse radish; cover all these with cold vinegar and boil in a porcelain-lined kettle until thick. The seasonings required are half a cupful of salt, a tablespoonful each of cloves, allspice, mace and cinnamon and red pepper to taste. Mix thoroughly with the rest of the ingredients before boiling.

At the Philadelphia Cooking School a cucumber catsup is made without cooking. Pare large cucumbers, remove the seeds and grate them. To every pint of the pulp add half a pint of vinegar, a tablespoonful of grated horse-radish, a teaspoonful of salt and one fourth as much cayenne. Drain the grated cucumber thoroughly before adding the spices, mix well and seal.

Dishes For Early Fall.

One advantage of our four seasons is the necessity they create for a change of food. Somehow while in California we never thought with much enthusiasm of any one vegetable since most of them were to be had during the greater part of the year. The dishes given below will be found agreeable in early fall.

Calf's Tongues Fricasseed. Boil the tongues until done—about an hour—take off the skin and trim neatly, then cut into slices half an inch thick; roll in flour and fry for a moment or two in hot dripping, place them in a saucepan, add parsley, celery and sliced onions and cover with gravy, broth or water; simmer, closely covered, for thirty minutes, slightly thicken the gravy and pour it around them.

New Turnips. Peel and slice a quantity of turnips and cook in salted boiling water to which you have also added a teaspoonful of sugar; when done drain in a colander and press as free as possible from water, then press through the colander, add a spoonful of butter cut in tiny bits and rolled in flour, a spoonful or two of cream and salt and pepper to taste.

Chicken Fritters. Trim every bit of meat from the carcasses of a pair of roasted chickens—that is, after you have made one dinner from them; put the bones on with a quart of cold water, an onion and parsley and stew for an hour and a half, when it should be reduced to one pint. Chop the meat fine, wet with the gravy, if any, and one-third as much bread crumbs or cold boiled rice, season to taste and mix with a beaten egg. If there was no giblet gravy left from the day before use any kind of stock or gravy, failing any of these, cream or milk to moisten the crumbs and meat. Make a thin batter with two eggs, a gill of milk and prepared flour and having made up the mince into tiny balls, dip them in the batter and fry in boiling dripping. Pile them on a dish and pour around them the gravy made from the bones which has been strained, thickened and seasoned.

Broiled Potatoes. Serve these with the first sausages of the season. Cut large cold boiled potatoes in thick slices and brown on both sides over a clear fire, laying them between the bars of a double oyster boiler. Season with salt, pepper and a little melted butter. Broil the sausages, splitting them if too thick and sprinkle each with a few drops of the juice of an orange.

Beef Soup. A very good and cheap soup can be made from a pound of lean soup meat cut into small pieces; fry it with a little dripping made very hot, add a teaspoonful of sugar; fry at the same time two onions cut in rings. The meat and onions must only get nicely browned and must not be allowed to scorch. Then add three quarts of hot water, a couple of small turnips cut in dice, a few stalks of celery, if at hand, cutting them in dice, and the usual soup herbs. Cook slowly for an hour and a half; add six tomatoes peeled and sliced and two large tablespoonfuls of rice; simmer an hour longer, season to taste and turn all into the soup tureen after skimming it free from fat, which spoils the appearance and taste.

Cucumbers Fried.—Peel and cut in slices lengthwise, and about an eighth of an inch thick; fry tender, brown in butter, and dish each slice on a piece of buttered toast. They are also nice fried as above, seasoned with salt, and laid on a hot dish, under a broiled steak or a nice mince of beef or mutton as a substitute for egg plant.

Why the Locusts Sing in Warm Weather.

AGNES CARR SAGE.

The calendar announced it to be summer, but the weather sadly belied it. Day after day dawned cold and wet and dreary. The beneficent sun obstinately hid his face; fruit and vegetables refused to ripen; roses and other fair flowers were nipped in the bud; and as for the grasshoppers, locusts, and beetles—those salamanders of the insect world—their plight was pitiable indeed. Warmth to them means life and the poor things, wrapped in mullen leaf blankets, shook as with an ague fit, or else lay stiff and stark upon the damp ground, too weak and wretched to pipe a note.

"Alack, alack! My wings droop and I look like a faded blossom," sighed a disconsolate butterfly.

"And I haven't spunk to contradict even myself," moaned a fractious katydid.

"The worst season I ever knew and we shall all die of starvation, if this humid spell continues much longer, and spoils the rest of the crops," grumbled Farmer Wheatly.

"While it is enough to give one the blues never to hear a bird or an insect, only those provoking tree-toads predicting 'rain, rain, rain!' every evening," added his daughter, merry, little, rosy-cheeked Molly.

At length, a very tough old inhabitant of the cornfield, a grasshopper named Gryllus, became desperate and declared "Something must be done, and they were the ones to do it."

"But, *mon ami*, vat vill zat sumpsin be?" inquired Monsieur Cigale, a gay, little French hopper in a remarkably tight fitting suit of vivid green.

"Ah, that remains to be seen, but I propose to call a meeting and discuss the matter."

"Vat, in ze rain!"

"Ay, in the rain if must be," put in a hard-backed, brown beetle. "It is a capital idea and I offer to carry round the notices."

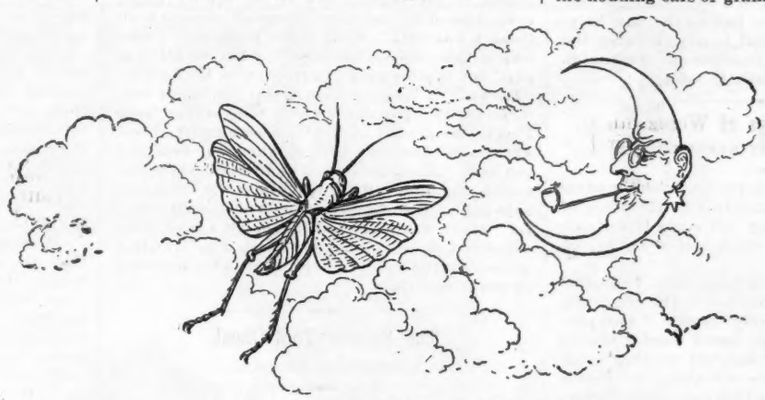
So it happened that each of the cicada community received a summons to attend a grand mass meeting, that very night, at the rail fence, and, as the down-pour ceased about sunset, thither they flocked in full force, a limp and bedraggled crowd ready to grasp at the smallest prospect of relief.

"Sunshine, sunshine, that is what we crave," they cried, "and the God of day must be implored to smile once more on the sad, tearful earth!"

Very good. But how and by whom was the petition to be borne to the monarch of light upon whose dazzling countenance naught but an eagle dared to gaze?

As they pondered this momentous question, chirping out feeble and inane suggestions, the clouds suddenly dispersed above their heads and, temporarily at least, the Man in the Moon could be seen sailing in his golden boat and looking really jovial with twinkling stars adorning his ears and a long pipe between his jolly plump lips.

"Ah-h-h! Behold ze blessed old lunatic!" exclaimed Cigale, clasping his skinny claws ecstatically. "In him, my friends, is our hope! He is—vat you call it—ze shadow of ze sun-god. To him let us despatch von messenger vith ze humble request zat he vould beg his great master to unveil his face and shine upon ze so unhappy world."



THE SONG OF THE CICADA.

Fly away, fly away, Cigarron bold,
Up to the crescent of glittering gold;
Fly thee so swift and fly thee so soon,
Bearing our prayer to the Man in the Moon!
Gain us sweet Sunshine, from out of the sky,
Life, heat and joy, ere the cicada die!

WHY LOCUSTS SING IN WARM WEATHER.

All approved of this fine plan but not one was willing to undertake the perilous journey to Skyland; although the antique Gryllus sniffed—"Hoppers are not what they used to be! They are lazy and have no spring! If it were not for my age and the rheumatism having injured by jump, I would go myself and be glad of the chance;" and so said all the old insects who were thus incapacitated.

At last a locust proposed that the younger cicada draw lots, which was accordingly done, the task falling upon Cigarron, a fine well-developed fellow who had stood the unhealthy season better than most of them.

He gave a caper of disgust when he found he was the chosen courier, but on seeing he was looked upon as a hero and gallant knight by Gauze-Wing, Long-Shanks, Pop-Eyes and the other belles and beaux of the cornfield, took heart of grace and bravely promised to tackle the old man of the sky and do his best, while he bade his friends sing at the top of their lungs to speed him on his way and keep up his spirits.

This they readily agreed to do and six of the strongest were also selected to toss him in a lily leaf and thus give him a good start upward as from a spring-board, after which he would have to depend on his own strength of limb and wing.

"One to make ready, two to show,
Three for a good-bye, and four to go!"

counted Brown Beetle, as he had heard the Wheatly children at their play, and then the lily leaf was tossed and away Cigarron flew, up, up, above the nodding ears of grain, above the house, above the tree-tops, speeding like an arrow toward the dancing lunar boat, while a shrill, strident "buzz-z! buzz-z-z! buzz-z-z-z!" arose upon the nocturnal silence and even penetrated the dreams of bonny maiden Molly making her turn over and murmur, "Oh, the dear little locusts! I hope they mean pleasant weather!"

She knew not that it was poor Cigarron's farewell dirge, for alas! he never came back again. Whether he fell prey to a prowling night-hawk, whether the man in the moon gobbled him up in mistake for a piece of green cheese or whether he was sacrificed as a martyr for his race will ever remain a mystery. The locusts prefer to believe the last, for the very next morning Old Sol shone forth in his most transcendent glory and continued to beam for a whole month; the mercury skipped way up into the nineties and bees and butterflies, beetles and blossoms all rejoiced.

Many and many a year ago this happened, but the story has been handed down from grasshopper father to grasshopper son, and, whenever the promise of warm sultry days gladdens their little insect hearts, the cicada always recall gallant Cigarron and, in his honor, chant his farewell song.

It is also believed by many of them that he can still hear the song, and as they promised to sing to keep up his spirits as he went on his upward journey they still keep their promise, much better I think than many a promise that is made nowadays is kept.

A Cuban Pilot Boy.

EDMUND PARKER.

On our arrival at Cienfuegos, the Cuban pilot boat met us at the entrance to the harbor, and after the pilot had stepped aboard, his boat was taken in tow. The boy left in charge of the latter sheered off and we proceeded through the narrow channel. On entering the bay the weather began to grow threatening, and it was evident that we were about to experience one of those violent squalls which are prevalent during hurricane season in

the South. A stiff wind blew the usually calm waters of the bay into an angry foam, and the rain began to pour in torrents. I was leaning over the steamer's rail, noticing, with amusement, the leaps and bounds the small open boat was making as she was dragged along, and her occupant had a lively time trying to maintain his equilibrium and to bail out the water with a tomato can.

Suddenly the boy shouted in Spanish that a leak had opened in the bottom of the boat, and that she was sinking. The steamer's engines were immediately reversed, and three or four men got on the gangway lashed alongside and threw the boy a rope. He seemed so paralyzed with fear, however, as to be totally incapable of action, and by this time the pilot boat was partly submerged. No time was to be lost, and our second mate quickly slid down the rope, and after a hard struggle succeeded in making fast the line to the now helpless youngster, when, amidst hearty cheering, the gallant rescuer and his unfortunate companion were drawn up the ship's side in safety.

The Beginnings of Words.

LUCY ELLIOTT KEELER.

A young friend of mine impressed with the value of minutes, turned her attention to the study of the dictionary, and during her many bits of leisure, used to drop into a chair and study its columns.

When I first visited in the household, I admired her habit of frequent reference to the big book, but supposed it was merely casual. I soon discovered, however, that she had a regular system of study. Whenever she finished reading a column she penciled a little dot above it. Beside this, she had four marks which she put just before the word to which she wished to call attention. A cross marked pronunciation; a cypher, spelling; a single dash, the meaning, and a double dash, the derivation.

"You do not know what fun it is!" the girl explained to me, "it is like walking in a great forest and finding new and unexpected flowers. Of course the old friends are there too, though even they blossom sometimes into strange shapes and colors. Here, for instance," as her forefinger rested on a little cross, "I never knew until recently, that the l in 'almond' should not be sounded; and this word 'abominable' marked with a ring—how surprised I was to find the letter l in it. I used to think it had only four syllables. Most of the marks are for meanings that I did not know, like 'ancillary' and 'apologue' and 'arcanum;' but best of all I like the derivations. Why the dictionary is full of stories."

She turned over a few leaves looking for a double dash. "Oh, here 'blackguard.' It has a cross, too, for pronunciation. Did you know it was 'blaggard?' but listen to this;" and she read: "In old times when the court moved from one palace to another, these palaces not being so well furnished as at the present time, it was customary that at such a removal all kitchen utensils, pots and pans, even coals, should be carried with them where they went. Those who accompanied these, the lowest, meanest and dirtiest of the retainers, were called the black-guard, then, any troop or company of ragamuffins; and lastly, when the origin of the word was lost sight of it came to be used in its present sense."

I expressed my interest and again she read: "'Bureau,' from a French word 'Bure,' a coarse brown cloth of woolen goods used as a cover to writing tables. So the writing table itself came to be called a bureau, and sometimes the rooms in which they were kept. That explains the Bureau of Foreign Affairs," she added, and again read: "'Candidate,' from the Latin 'candidus' meaning white. In old Rome all office seekers were obliged to wear white togas." 'Caprice' comes from the Latin 'Caper' for 'goat.' You know how our Nanny turns and springs sidewise and backwards and in every way you do not expect; and we use the same word, 'caper' to jump about." "'Sandwich' has a funny history," she went on, turning the leaves at random. "One of the Earls of Sandwich was a great card player, and would hardly stop to eat. He made his servants prepare his food by placing meat between slices of bread, so that he could devour it without loss of time." "'Vestry-men' are so called because they originally held their meetings in a room of the church in which the priest's vestments were kept."

The rest of the family shared her enthusiasm, but one of the first remarks at the dinner table was from the head of the house about a lecture he had heard the evening before from Professor Fiske. "He mentioned the origin of the word 'By-laws,' Alice, and I put it in the front corner of my brain to bring to you. In the old English shires where the Danes acquired a foothold, the township was called a 'by' and it had the power of enacting its own 'by-laws or town-laws." "Our botany teacher told us to-day," one of the boys presently spoke up, "that the word 'fern' comes from an old German root meaning 'to fly.' Can't you just imagine some delicate fern-leaves being the wings of a lovely green bird?"

I sat there too much surprised at this interesting and interested conversation to eat. I was accustomed to far slighter talk at the dinner table, even from older and more educated persons than those I was with. What could I say to hold my own at this philological feast? "Let me fill your cup," my hostess said. "Try our new He-No tea." "He-No!" I laughed back. "Do you know how it received its popular name? Many a time have I seen teas graded in the Chinese quarter of San Francisco. The very best is taken out first, and put aside. Then the second quality, the third, the fourth, the fifth. Of the remainder the Chinaman says in his classic English, 'He no tea!' and there it is." There was a general laugh, but I have often wondered since whether my burst of information atoned for the lack of compliment to my hostess's pleasant beverage.

The Family Tool-Chest.

PRUDENCE RHODES.

A tool-chest is a most important adjunct to a well-regulated household. Whether one lives in the country, or city, it is a troublesome and expensive matter to send for a workman every time a lock is out of order, or any simple repairing is to be done. Twice as much energy is generally expended in getting the carpenter or locksmith as would have been necessary to do the work yourself. The only way to have tools handy is to have a box expressly for them, to fit it up with good serviceable tools, and to make each member of the family, guilty of not restoring one of them to its proper receptacle, liable to a fine.

A good stout box, such as any grocer will sell for ten cents, can be made so ornamental that it may become part of the sitting-room furniture. Put it together with screws, drawing out as many of the nails as you can; get a quantity of narrow pine molding and fasten it around three sides of the box, but not the cover, mitre the corners neatly and put it on with thin brads in a workmanlike manner; fasten the cover on with big brass hinges put on the outside. These you will doubtless have to send to some large city house-furnishing store for, as well as for a brass handle for either end, but the cost will be very trifling. Get at the same a brass lock and escutcheon. Before you apply these, give the box two coats of dark oak stain and two of varnish, but see that each successive coat is thoroughly dry before you apply the next. It is quite a fad with wealthy people to have old English and Florentine oaken chests in their halls or dining-rooms, and you will find your box, besides being useful, is a really pretty piece of furniture.

My own son has such a box, of which he is the sole owner, having paid for the tools with money earned in doing all sorts of odd jobs for the house. If a trunk key is lost, with a blank key and his file he makes one which would otherwise have cost twenty cents, besides the labor of taking the lock from the trunk to get it fitted. Include in your tool-chest a glue-pot, which can be manufactured from an empty tomato can, and one which has held condensed milk.

Stiefmutterchen.

S. JENNIE SMITH.

"Such a long, hard word," thought Clare, as she stood before a picture which her father had just brought home. It represented a large wreath of beautifully-colored pansies, and underneath the ring of flowers was printed, "Stiefmütterchen."

"What does it mean, mamma?" she asked aloud. "I never heard that name for pansies before. Lulu calls them 'Johnny-jump-ups,' and aunty calls them 'heartsease,' but that name—why, I don't even know how to say it."

Mamma smiled and repeated the difficult word for her daughter. "It means, 'Little Stepmother,'" she added.

"But why do they call them stepmother? I think they look more like tiny monkeys."

"Go out into the garden, and bring me a pansy, dear."

Clare obeyed, wondering, as she did so, why her mother had neglected to answer her question. Presently she returned with one of the finest pansies that could be found in the garden. "Shall I put it in your hair, mamma?" she asked.

"Not yet, dear, for I want you to look at it first. Perhaps you have noticed that this little flower is nearly always composed of three very fancy leaves and two plain ones. The prettiest leaf of all, the one in the middle there, the Germans used to call the stepmother, because her clothes were so gaudy, and the leaves on each side of her were her own children, also gaudily dressed, but the plain ones, or, as they said, poorly clothed, were her step-children. Now, if you will turn the flower over, you will see that underneath the stepmother are two little bits of green; they were said to be the stepmother's chairs—she had two, you see, and each of her own daughters had one to herself, while you will notice she has given her stepdaughters only one between them."

"O, mamma, how queer! Did they really think that stepmothers were like that, and do you believe it?"

"In answer to your first question, I am sorry to say that I believe there really were some little German girls who were taught that this innocent flower was a type of what stepmothers were. I will answer your second question by asking you one. What do you think about it?"

"Why, I think—oh! of course, I know it isn't so," and Clare wound her arms lovingly around her mother's neck; "for haven't you been the very kindest stepmother to me ever since you came to take my other dear mamma's place? And your own girl, Lulu, who has become my dear sister, never has one bit more of anything than I have. Mamma, I'm going to contradict that pansy-stepmother story to every little German girl I meet."

Our Puzzle Column.

It was our intention to start the puzzles again this month but our cut was not ready, so we cannot begin the contest until the November number, but it will be well worth waiting for, and we promise some good contests for this winter.

THE PRIZE WINNERS FOR JUNE.

First Prize—Nellie Denny, Crestline, Kansas.
Second Prize—James H. Dorey, Anacostia, D. C.
Third Prize—Estelle Richey, Lawrence, Mich.
Fourth Prize—S. P. Shull, Sulphur Grove, Ohio.
Fifth Prize—Mamie A. Gale, Syracuse, Florida.

ANSWERS TO THE JUNE PUZZLE.

14. Procrastination.

15. And ye shall seek me, and find *me*, when ye shall search for me with all your heart.—Jeremiah 29, 13.

16.

MARCH
ADORE
ROVER
CREED
HERDS

CHAT WITH THE PUZZLE EDITOR.

PUZZLE EDITOR, AMERICAN AGRICULTURIST: The first prize in the April contest, the Warwick Perfection bicycle, arrived to-day, a handsome machine, and evidently all that its name implies. I am much indebted to the AMERICAN AGRICULTURIST for a great deal of enjoyment in prospect, and shall hereafter feel a special interest in the paper. Thanking you for the very generous prize,

I remain, yours very truly,
FREEMAN C. GOFFE,
New Rochelle, N. Y.

PUZZLE EDITOR, AMERICAN AGRICULTURIST: I wish to acknowledge the receipt of the second prize ($3.00) for solving the puzzle of noted Americans.
JNO. B. GRANT,
New York City.

Puzzle Editor:—Please accept the sincere thanks for puzzle prize book "Life of General Sherman."
SARAH H. HAMMAN,
Swampscott, Mass.

Camping in the Mountains.

JAMES NELSON.

At last the train rolled up to the station at White Junction, and I hurried out. The first thing I received was a breath of fresh country air, and the next, a warm greeting from my Cousin Walter. We soon found my baggage, and after packing it away under the seat, we climbed into the high spring wagon and set off for the farmhouse. It had been my custom to spend a month of my summer vacation with Uncle Zeb, who lived on the old Nelson homestead, where both he and my father were brought up. The country around the little village was as wild as when the shouts of the red man first broke its savage stillness. Deer and bears roamed through the forests, and panthers were occasionally seen. The horses sped swiftly over the country road, and ere Old Sol hid his face behind the western mountains, we arrived at the farm. After the greetings came a bountiful supper, and then a stroll until bed time.

"Hello! Ned, wake up!" I started up, rubbing my sleepy eyes. Walter stood by, and laughingly said, "Gracious, how you started! I thought you were coming right out on the floor." I was now wide-awake, and jumping out of bed, slipped into my clothes, and ran down stairs after Walter. I found him out at the barn helping the farm hands in taking care of the cattle. "Say, Walter, what was that plan you were going to tell me about this morning?" "Oh, yes, I forgot that. Just wait until I finish feeding, and then I will tell you." I waited until he was through, and then we sat in the hammock that hung suspended between two great maples which grew in the front yard. "What would you say to camping out," he asked, as soon as we were seated. "Oh, that would be glorious," I exclaimed, "if Uncle will only let us go." "Let us go, why, Ned, of course he will." "Three cheers for camping out," I shouted, and they were given with a will. Aunt Hattie was setting the table, and when she heard the noise she called to Uncle Zeb, who was straining milk in the milk room, "Zebadiah, I wish you would see what is the matter with those boys, and tell them to come to breakfast."

Uncle found us in the hammock, and before we sat down to breakfast that morning he had promised to let us camp out a week in Mead's Hollow, which is about four miles from the farm. There is a log road all the way, and Uncle Zeb said John, one of the farm hands, could drive us up there after dinner. It took nearly all the forenoon for us to get ready. At last the things were packed into the wagon, and after a hearty meal we set out for Mead's Hollow, a break in the mountain chain. Here and there a tall pine shakes its head in the breeze, while the fast decaying stumps are all that is left of what was once a mighty forest. A little brook runs through the center, and the ground is covered with a thin growth of grass and ferns. Here we pitched our tent, and, after putting everything safely away inside, we proceeded to cut some dry wood, for a black cloud that was rising out of the western horizon gave warning that a shower was near.

I was on the way to the tent with an armful of wood, when a drop of water fell on my face, another followed, and soon the rain fell in torrents. But we escaped to the friendly shelter of our tent, whose canvass sides were waterproof. The shower lasted until late in the evening. At last the rain ceased, and I unfolded my blanket preparatory to retiring, when an exclamation from Walter caused me to look up. He stood in the door listening; I stopped and listened, too. A low, far-off cry burst upon my ear. "What is it, Walter?" I asked. "I should think that it is a lynx, by the cry," he replied, and stepping back into the tent, he took down Uncle Zeb's long rifle and proceeded to load it. Again we heard the cry, but this time it seemed farther away than before, and although we waited for over an hour, we heard no more of the lynx. "Well, Ned," said Walter, "I guess we have seen all we will of that lynx, and I think that it is about time we went to sleep." Suiting the action to the words, he spread out his blanket, and was soon in the "land of Nod." I was not slow in following, for our day's work had made me tired.

The sun peeped in the door next morning and awoke us. I brought out some dry wood from the tent, and made a fire, while Walter prepared to make some hasty pudding in the iron kettle. The kettle was hung over the fire, and leaving Walter to watch it, I shouldered my fish pole, and started off to try my luck with the speckled beauties. The fish were plenty, but small, and I followed down the brook, thinking I should find a larger one at no great distance, and I did. Having gone about a quarter of a mile, the rush of the waters told me that my wished-for brook was there. I stole up to the bank and threw in my line. It was instantly seized, and I landed a half pound trout. This surely was sport. I stayed until I had filled my basket, and then started for camp, reached the edge of the clearing, and was just going to call Walter, when a sharp whistle caused me to look up, and there in the pine tree he sat without hat or jacket, a picture of distress. Just as he whistled, a large bear, which I had not perceived before, got up, and after looking around, proceeded to try the pudding in the kettle. If we had not been in such a serious predicament, I should have burst into an uproarious fit of laughter to see that great ungainly beast try to eat hot pudding. He put his paw into the dish, but the pudding was so hot that he could not endure it. At last he got some into his mouth, and then such a sneezing and choking I never heard, before nor since.

THE BEAR SHOOK OFF THE HOT PUDDING.

At last the bear gave it up and sat down upon his haunches; he was so near the tent that I thought it would be impossible to get the rifle, and the only thing I could do was to run down to the farmhouse and alarm Uncle. I started down the wood road, being very careful that the bear, which had not heard me before, should not hear me now. I started on a run as soon as I got out of hearing, and arrived at Uncle Zeb's about nine o'clock. I found him busy in the hayfield, but as soon as he heard of Walter's peril, he sent the farm hands to hitch up the horses while he ran into the house and secured another rifle. We all got into the wagon and started on our journey. The horses were left with one of the men about a quarter of a mile below our camp, and Uncle, with the other farm hands and myself, proceeded on foot. Everything looked the same as when I left, except that Bruin had found my fish basket and devoured the contents.

When the bear saw us he came forward with an angry growl. Uncle Zeb leveled the rifle and fired. The bear gave a low growl and fell dead in his tracks. The man with the horses hearing the shot and thinking that Bruin was dead, now drove up. The bear was loaded on the wagon, Walter came down from his high seat and expressed his indignation against the bear by kicking his dead body and repeating Bret Harte's:

> "Coward,—of heroic size
> In whose lazy muscles lies
> Strength we fear and yet despise;
> Savage, whose relentless tusks,
> Are content with acorn husks."

Both of us were satisfied that we had had enough of camping out, and we determined to change our quarters from Mead's Hollow to Uncle Zeb's homestead. My month at the farmhouse sped swiftly away, and I soon found myself at White Junction depot, bidding Cousin Walter an affectionate good by as the train started.

Farming in Alabama.

Within the past ten years it has been discovered that the soil and climate of the Alabama pine woods are admirably adapted to the growing of fruits and vegetables. In Mobile county, truck farming has become an industry of the first importance, so that more than 100 carloads of garden products are shipped to the North every day during the busy season of March, April and May. As yet, this business has centered pretty closely about the city of Mobile but is reaching out along the railway lines. Settlers are availing themselves of the cheaper pine land and are engaging not only in vegetable growing but in the culture of melons, strawberries, pears and grapes.

In the northern portion of the county, strawberries are proving an exceedingly sure and profitable crop and there are many comparatively new settlers who have now from two to ten acres each in bearing. They have a long fruiting season here and are able to send early March shipments north in time to secure fancy prices, and have a good market in the southern cities for the later crop. Fertilizers have to be used very largely. The indications are that a pear district will develop here quite equal to the famous one in Georgia. Plums, especially the Wild Goose and Marianna, also make paying crops, and watermelons promise to become a leading feature. There is at least one vineyard of sufficient age and extent (about 40 acres) to prove that branch of horticulture a commercial success. Grapes can be put into the northern markets almost, if not quite, two months in advance of the regular northern supply.

The price of milk is 40 cents per gallon. Good butter makers find here an ample reward for the exercise of their skill. Jersey butter sells at 50 cents per pound in Mobile the year around. The native crab-grass springs up everywhere on cleared land as soon as cultivation ceases, and most of the truckers harvest enough of it to feed their working stock through the winter. Cut when in bloom, and properly cured, it makes an excellent and nutritious hay, second only to timothy and finding a ready sale.

As most of the labor in these lines, especially in gardening and the growing of small fruits may be performed during the cooler months of the year, from October to May, a Northerner may safely expect to work in this climate as easily and with as much satisfaction as anywhere in the central North. There are many northern farmers here now and without exception they are successful and contented, though somewhat surprised that they have been able to accomplish so much from an Alabama pine-barren.

J. K. REEVE, Mobile Co., Ala.

California Wheat.

The harvest season of this semi-tropical land is almost over. The wheat crop is large and good, the grain being plump, weighing over 60 pounds per bushel. In the great San Joaquin Valley, wheat farming is pursued on a gigantic style, many wheat farms covering from 10,000 to 150,000 acres of land. The man who plants less than 160 acres of wheat in the San Joaquin Valley is considered a pigmy by the wheat kings. There are, however, many small wheat farmers who raise from 40 to 80 acres of wheat. In many cases one of the 40-acre wheat fields yields more wheat than a 160-acre field farmed on the old California style of poor plowing and careless seeding.

Wheat harvesting lasts from the first of June to late in September. The mode of saving wheat in the San Joaquin Valley is by two processes: the header, and the combined harvester. The header is a machine that cuts off the heads, leaving a very tall stubble. It varies in size from a 10-foot cut to 20 feet, and is propelled by four or by eight horses, respectively. Two wagons with header beds, 10 by 18 feet, are drawn by four horses close by the side of the header to catch the wheat heads carried up by an elevator belt. When one wagon is filled, it is driven to the place for stacking, and unloaded, and the empty wagon takes its place under the header spout. A header crew consists of four or five men. An average day's work is about thirty acres. When the wheat has been headed and stacked, it is then ready for the steam thresher. The fuel of those threshers is the chaff or straw from the stack.

The stacks of wheat very often stand in the open field for six weeks, or two months before the thresher can get to them. And again, the wheat, when it is threshed, very often stands in the field in sacks until the rain compels the economist to haul it to the warehouse. The combined harvester and thresher is a machine which cuts, threshes and sacks the wheat all at one and the same time. It is of different sizes, but the usual cut is 16 feet. They are propelled by 20 or 30 horses. Four men are needed to manage the machine. Forty acres is a good day's work. San Joaquin Valley is a continuous wheat field.

Fresno county is in the center of the San Joaquin Valley, and is the banner raisin grape county of the United States. Fresno county has also extensive fruit orchards, watermelon fields and alfalfa meadows.

JAMES E. DONNELL, Fresno Co., California.

Northwestern Montana.

The Flat-Head River Valley is larger than the State of Delaware. It is amply drained by numerous rivers and creeks. The Flat-Head river reaches the valley by way of Bad Rock Cañon in the Rockies on the northeast. The railroad comes the same way. The river runs southerly through the valley into Flat-Head lake. White, Fish, and Stillwater creeks, from the northwest, are the most important tributaries to it. Kalispel is the most important town. Columbia Falls is about one and one-half miles from the Cañon. Large deposits of coal have been found in the range on the north and northeast, also silver and lead bearing deposits in paying quantities. The most important discoveries of precious metal have been made in the Kootenai range about 100 miles west. Timber is abundant along the larger streams, white and yellow pine, fir and tamarack are the principal varieties for milling purposes. Fish and game are plentiful, notably deer.

The most important feature of the wealth of this country is its farming land. The soil is a sandy loam. Large tracts are still covered with decayed timber, and hence, produce excellent crops with cultivation. No irrigation is needed. Plenty of rain falls in the spring and early summer. It rained nearly every day in June. Wheat, oats, barley, rye, and all kinds of garden vegetables are grown in abundance. Corn is grown successfully only in some portions of the valley. Wheat yields from 30 to 40 bushels per acre, oats from 35 to 55 bushels, potatoes from 300 to 400 bushels on summer fallow or old land. Timothy and alfalfa can be grown successfully. The country has a delightful climate. The nights are cool in summer. The heat of the day is not oppressive, and the winters, though attended with plenty of snow, are much milder than in Eastern Montana, Dakota, or Minnesota.

F. E. FRISBIE, Missoula Co., Montana.

Alfalfa in New Mexico.

Alfalfa or lucern, grows luxuriantly in the irrigated fields of New Mexico. It is sowed broadcast with some grain for shade, and frequently watered until it has taken root well. It is mowed once or twice the first season in order to give it a thick growth. The hay is left on the ground for mulch. It is particularly adapted to arid climates, for its large roots grow deep. Once planted on a piece of ground it is very difficult to destroy, this being possible only by successive drouths or flooding and freezing in winter.

Alfalfa is irrigated several times each season. After each watering one can almost see it grow, and before long its sweet-odored purple flower appears and the field becomes a resort for the honey-bee. The second or third year the alfalfa may be mowed for hay. When in full bloom is the time to cut the field and give a new crop opportunity to develop. In this way three or four crops, in rare cases more, may be cut in a season.

During the winter, an alfalfa field may be used as pasture for cattle, since the alfalfa persists in growing under the influence of the warm southern sun. This should not be done farther north, as the aftermath holds the snow, preventing winter-killing. If planted with grain the tall stubble will protect the young plants the first winter.

To irrigate a properly prepared alfalfa field is no great task compared with the irrigation of other crops. The field should be perfectly level, so that with a very few ridges the entire field can be flooded by putting a gate across the ditches, and forcing the water to flow over it. If the field is not level, ridges have to be constructed so as to divide the field into squares or pans, the water being led from one to the other. This makes irrigation difficult and also interferes with the use of mowing machines.

R. S. TARR, Lincoln Co., N. M.

Potatoes and Pork in Michigan.

The potato crop of Michigan has been growing in magnitude for a number of years. One year with another, on the right kind of land and with proper culture, it pays to raise potatoes. But whether to sell in the fall, or keep the crop until the following spring, is a question. Last year the crop was enormous, and could hardly be sold at any price, and nearly all farmers kept their potatoes over, hoping to get enough out of them to pay expense of raising and storing.

About May, when the freshets in the Southwest ruined thousands of acres of potatoes which were being raised for the early market, old potatoes took a boom, and good ones sold readily at 40 to 50 cents. The boom, however, lasted but a few days, when the market suddenly collapsed, leaving many buyers and some farmers with potatoes on hand, holding for a still higher figure, which they fully expected the shortage of the new crop would produce. It always pays to sell when one can get a fair profit on the cost of raising.

The great majority of farmers sell their pork in the fall. Taxes must be paid, and they depend on the pork to pay them. Consequently, the price drops to a very low figure, barely enough to pay for the corn consumed in fattening. After New Year, when the rush is over, those farmers who have kept their hogs, naturally expect a rise in the price, but it sometimes fails to come until nearly every one has become discouraged and has sold his pork. Along in March and April pork may bring a better price, but not usually enough to compensate those who have been feeding all winter. As a rule, fall pigs, farrowed in September or October, if kept in a warm place and properly fed, bring better returns than spring pigs sold in the fall. It rarely pays to keep a pig a year before killing.

W. ROCKWOOD, Genesee Co., Mich.

Reaping and Threshing in India.

The Indian reaping hook consists of a bit of hard iron six inches in length, an inch in width, curved like an old-fashioned sickle, with a notched edge and short handle. The cost of this implement is four cents. The harvester sits upon his heels, cuts a handful of straw, which he lays down, then waddles on without rising, cutting about one-twelfth of an acre a day, for which he receives money to the value of five cents, boarding himself. Sometimes he is paid in grain; at others he receives every thirtieth sheaf. If he cuts, carries, threshes and delivers the grain and straw at the owners house he receives one-sixteenth of the grain.

After this reaper comes a binder, who gathers up the grain and binds it into sheaves about the size of the American sheaf. It is then shacked, and after a day or two carted to the threshing floor. The threshing machine consists of a floor or bit of hard ground, a stake, a number of cattle and a driver. The grain straw is piled around the stake on the floor, the cattle are connected by a rope tied to their horns, one end of the rope tied to the stake and the driver keeps them going round until the straw is tramped very fine into what is called bhoosa. This, after the grain is separated from it, is fed to the cattle. The people raise almost insurmountable objections to any other mode of threshing, as this is about the only way in which the straw is made into bhoosa. They do not only thresh to get the grain out, but to break up the straw and particularly to flatten it, so that the cattle will readily eat it.

The superintendent of agriculture in the Bombay Presidency had a large threshing machine sent from England and made a contract with a landholder for 50 acres of wheat in order to try the machine. After the work had commenced the landholder fell upon his knees and piteously begged for the threshing to stop as it would ruin him, for the cattle could not eat the hard, unbroken, stiff straw. An ordinary straw cutter will not do to cut up the straw, as they hold that it must be flattened and made smooth as well as be broken

up short. There is real force in this objection, and until it is overcome by an improved machine the people will use the cattle and the threshing floor. In time, when they can be induced to raise green fodder, or preserve grass as hay, or make ensilage which is being introduced, they may adopt the civilized method of threshing. Yet their system works very well. They have the cattle and plenty of time, for after the wheat harvest they have but little work to do, and the straw is very dry.

The winnowing is done with a scoop, called a soop, about eighteen inches wide, made of reeds, and in shape like a large dustpan. This is filled with grain, straw and chaff, and held in the wind so that the chaff and straw falling from it is blown from the grain. If there is no wind, two men take a blanket, one at each end, and wave it between them while a third dribbles the grain from the soop. Twenty years ago I imported a fanning mill from Racine, Wis., and it was probably the first one among a population of two hundred millions of people. To-day there is probably not a fanning mill used by a cultivator in all these Provinces. There are some used at the large markets and in the English flouring mills. The cultivators are too poor to purchase them, and the landholders will not take the trouble, or be willing to spend their money in this way.

I. L. HAUSER, Bareilly, India.

A Fertilizer for the Pacific Coast.

In the new State of Washington, and especially in the Puget Sound District, where the soil is so productive, the average farmer has, as yet, seen little need for fertilizers. But the market gardeners and the truck farmers are daily becoming more numerous and are furnishing the products which our growing cities have, until recently, received almost entirely from California. Hence, the necessity of fertilizing becomes more apparent. The majority of the market gardens and truck farms are located in the river valleys. During certain seasons of the year the salmon fish, of which there are several varieties, seek the headwaters of these rivers to deposit spawn. One variety, commonly known as the humpback, which is of no value for food, does not return to the salt waters after depositing spawn, but dies in vast numbers, covering the shores of the streams. As yet, no systematic use of these fish has been made for any purpose, but here is an opportunity for our gardeners and farmers to secure a valuable fertilizer at a very small expense.

In October of last year I made a trip up one of the rivers, tributary to Puget Sound, and for a distance of 30 miles saw on the shores and floating on the surface of the river, millions of these dead and dying fish. There were numerous places where, by reason of shallow water, or eddies, the fish had lodged in immense quantities, and it would have been possible to load light draught scows, or carts, at a very small expense, with tons of them. Farmers and gardeners find them so rich a fertilizer that they must be used sparingly.

J. W. DODGE, King Co., Washington.

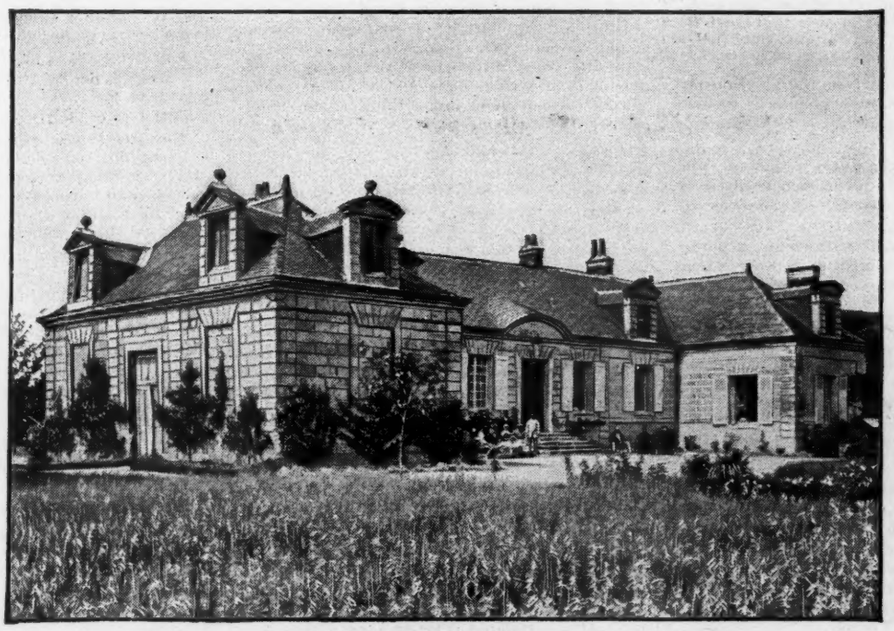
A Charming Rural Home in France.

Do the readers of the AMERICAN AGRICULTURIST care for a glimpse of quiet rural life in the heart of *La Belle France?* Well, here is a photograph of our home. It was built in the seventeenth century, by Mansart, an architect of such wide renown that his style of roof is known even in our sister republic of the great West. At first it belonged to the Abbey of Pontlevy. It was purchased by my family in 1791 and so it has been our home for just a century. It was formerly surrounded on all sides by vineyards, some of which continued to produce grapes right along for four or five centuries. But the terrible phylloxera attacked them, and we were obliged to destroy the larger part, and plant grapes on fresh ground.

This commune, of which my husband is *maire*, is largely covered with vineyards. A French commune is, I believe, very nearly equivalent to an American township. The rest of the land is devoted to crops of wheat, oats, corn, potatoes, beans and a great variety of fruits. There are few large farms and no fences; but nearly every man owns a few acres of land. On this he raises grapes for home consumption and generally has ten, twelve or fifteen barrels of wine every year to sell, besides keeping a cow, a goat and one or two pigs. All are hard-working and economical. The women, especially, contribute greatly to the general prosperity, by the ceaseless industry and careful management. Yet with all their hard work these *paysannes* are very light-hearted and fond of amusement. The vintage is a special time of general gayety. After the day's labor is over, young and old sup together, and the day ends in song and laughter.

A great change has gradually come over the country since the downfall of the empire and the advent of the republic. Education is more widespread, children all go to school, and the stolid, plodding drudge of old has given place to a new generation of more refined workers who read, study new methods, employ fertilizers, produce more, and are happier and more prosperous. The press is a powerful factor in this new life, by its direct instructions, and still more by arousing mental activity. It is believed that France will, ere long, produce enough wheat, not only for her own consumption, but have a surplus for exportation. Believe me, Mr. Editor, an admirer of your country and a lover of my own.

GABRIELLE BEAUFORT, Dep't Loire et Cher, France.



CHATEAU LE BOWEN, CENTRAL FRANCE.

Mexican Coffee.

The chief coffee producing countries of the world are Brazil, the Dutch Colonies, West Indies, the Central and South American Republics, Ceylon and Mexico. Brazil alone produces two-thirds of this quantity, and one-third of the entire world's crop is consumed by the United States alone. Mexican coffee is as good as that of Brazil and probably better. The kind grown in Colima on the Pacific Coast was first obtained from Costa Rica and is considered superior to any other raised in the country and fully equal to the best Mocha. Indeed it is often sold in our markets by that name, and, to tell the truth, for many years Americans have been drinking "Rio" and "Java" coffees from Mexico.

With a climate similar to that of Brazil and a population alike in numbers and character, Mexico's exports of coffee are the smaller and Mexico's mines are considered her chief source of revenue. The difference of the results is probably accounted for by the different methods of culture. In other countries the plant is supposed to require an annual temperature of from 62°-66°, but in Brazil no such limitation is observed.

Coffee seems to grow in all latitudes of Mexico. The virgin soil of the cleared forest is planted with trees, but in old lands, soil composed of two-thirds red clay and one-third of deposit are most desirable. The taste and aroma of the coffee grown on the bottoms is less agreeable than of that produced on the upland. The trees are propagated almost exclusively from the seed, and after a year in the nursery are set out in the orchards at the rate of 200 trees per acre, which at maturity will yield about 1,200 pounds per acre. Each coffee tree yields about 20 pounds of berries, but when hulled and ready for market, the amount is not greater than from one to seven pounds. The washed or pulpless coffee which is preferred in England and Italy is steeped for several days in water prior to drying in order that the hulls may come off more readily.

In Mexico every Indian who owns a few feet of ground, especially if his land lies on either of the sea-facing slopes, which extend for a great distance, from the table-land of the interior to the second plateau, usually has his hut and vegetable patch surrounded by a high hedge of banana and coffee shrubs or trees, planted alternately. The banana grows rapidly and soon unfolds its broad leafage over the slow growing and beautiful little coffee shrub, to protect it from the glare of the sun by day, and the light frosts of the upper and middle plateaus by night. When two or three years have passed, the delicate shrub has become a large bush and is no longer so sensitive to sun and frosts. At five years of age the plant, if not cut back, will stand twelve or fifteen feet from the ground and will then begin to give back to the owner an ample payment for its cost. As early as April the coffee twigs will begin to break out into small white blooms, as waxy and exquisite as trailing arbutus, as sweet and white as orange blossoms and as finely contrasted with its waxy shining green leaves as are those universal bridal blooms. By the middle of May the coffee tree will be in the green berry but will still be yielding its fragrant white blooms, for, as if in love with its own dainty beauty, it is seldom wholly out of flower. In November it will stand slightly flecked with white blossoms and some green berries but glistening with the added beauty of clusters that are ripe and red. From this tree so lightly cared for the owner will gather, yearly, a pound or more of excellent coffee.

E. P. ALLEN, Acapulco, Mexico.

Kind Words.

An All Round Farmer's Paper.—The AMERICAN AGRICULTURIST is an all round farmers' paper, and the best one published in this country.
G. M. PRATT, Allegheny Co., N. Y.

Gives Good Advice.—I do not know of any agricultural paper which gives farmers such good advice as does the AMERICAN AGRICULTURIST.
JAMES AMERMAN, Hunterdon Co., N. J.

Enjoys Its Company.—I appreciate and very much enjoy the company of my old friend, the AMERICAN AGRICULTURIST. Could not get along without it.
R. JOHNSON, Polk Co., Minn.

The Best Agricultural Paper.—The AMERICAN AGRICULTURIST is the best agricultural paper in the United States. I cannot get along without it.
W. STOVER, Marion Co., Kan.

FARMING IN FOREIGN LANDS.

Farmers in the Argentine are being urged to export butter to England.

The phylloxera exists in 15 provinces of Spain over an area of 675,000 acres.

In France the pear crop will be medium, and that of apples a little more satisfactory.

Both Hamburg and Bremen are importing live cattle by steamer from South America.

A consignment of grapes shipped from Victoria to London brought fom $4 to $7.50 per case.

Locusts have done much damage to crops in the South Western province of Tunis in Africa.

A parcel of rice grown on the Clarence river district, New South Wales, shows excellent quality.

Farmers in Manitoba are urged to raise hogs instead of importing large quantities of pork from Eastern Canada.

South Australian farmers find that they obtain a much higher price for fruit where the trees have been sprayed.

The area planted to rice in Queensland was 456 acres in 1891, yielding 22,914 bushels. The industry is being extended.

Six agricultural conferences were held in the experimental fields at Vincennes, France, under governmental auspices.

The condition of crops in Norway and Sweden is generally satisfactory, with the exception of rye which has suffered in a few districts from want of moisture.

Latest crop reports from Ontario are not as favorable as earlier advices, and show that much injury was done by the heavy rains, especially to fall wheat.

The total exports of wool from the Australasian colonies, in 1891, were 106,000,000 pounds of washed and 539,000,000 pounds in grease, a total value of $121,300,000.

Freight rates on agricultural products from farms to terminal points have been reduced by the government of Queensland which owns all the railroads.

The Belgian government will create a butter station similar to those existing in Switzerland and Denmark, also a seed station after the model of the one in Paris.

In the United States there are 44 people in every 100 who are engaged in agriculture, as compared with 56 in Canada, seven in England, 48 in France, and 17 in Germany.

Exports of wine from South Australia were 266,814 gallons in bulk, and 19,350 gallons in bottles, an increase of more than 64,000 gallons over the exports of the previous year.

In West Prussia oats and barley are poor, potatoes backward, wheat generally in good condition, rye did not bloom favorably, but meadow hay was of excellent quality.

Russia exports 10,000 fowls weekly to Marseilles, France, and the agricultural papers of Constantinople are urging farmers there to raise poultry after the manner of the French.

The Argentine corn crop of this season is the best on record. Cold and dry weather has improved the quality of the corn and its condition for shipping, packing and export.

Several hundred farmers in South Australia have asked for an extension of time in which to pay their water rates owing to their inability to do so through the failure of their crops.

The association of fellmongers, wool classers, scourers, carders and tanners of New South Wales has requested the colonial parliament to impose an export duty on skins and wool in grease.

In Jamaica an acre of land under ginger yields an average crop of 4,000 pounds avoirdupois. The plant from which ginger is grown for preserving is the *Zingiber officinalis*, or the true ginger.

The number of margarine factories is increasing in Denmark, the production being 1,225,000 pounds in 1889, and 5,800,000 pounds in 1891. Its export to England and Norway failed on account of its pale color.

In Western Australia the number of sheep at the beginning of this year was 1,962,000, being 400,000 less than in 1890. Cattle increased 3,000 during the year and number 134,000, horses 41,000, hogs 26,000 and goats 4,400.

In England the seed crop of Swede turnips is one of the worst on record and will, in many cases, be below one sack to the acre. Cabbage suffered from an attack of a small maggot which eats into the stems and kills the plants.

In a shipment of Tasmanian apples to London, one-third were rotten. Six thousand cases were sold, the highest price realized being one dollar per case. Another lot sold at two dollars, but some pears were unsalable.

The cultivation of the Orleans and Peruvia varieties of cotton is likely to be largely extended in Peru, and several cleaning mills have been erected in central situations. Both these varieties yield a cotton of superior staple and excellent quality.

The first meeting of the Agricultural Council of Alsace-Lorraine, discussed the question of raising funds for the improvement and development of horse and cattle breeding and to assist all large agricultural shows and cattle insurance societies.

The reason of the prohibition of all cereal exports in Russia is claimed to have been largely due to financial motives of the government. There is little doubt that the Southern section of the country, containing about 7,000,000 people, will again suffer from a second famine as not a drop of rain fell there for many months.

The agricultural statistics for Tasmania show a splendid increase in wheat, the average being 22.39 bushels to the acre. The total increase is 30,020,984 bushels. It will be the first time for years that the breadstuffs market will be supplied locally. Apples show an increase of 220,000 bushels, the yield being about 570,000 bushels.

The agricultural department of France is inquiring into the origin of contagious diseases among animals. The reports to be made are to state the place from which the animals come, date of their arrival, name and abode of the merchants who sell them and of their former owners, and the occasions of contract of the disease.

In France cold nights and dry weather have resulted in a shortage of pasture, and sales of cattle have been restricted. The hay crop is small and cereals thin, especially oats. Tobacco planting and the germination of maize and potatoes were hindered by drouth which favors the increase of the insect pests. The sugar beet crop has not grown well in France, but in Germany it promises a good yield.

Agriculture in Victoria is not on the increase, the crop area of the 1891-'92 seasons being 6,341 acres less than for the previous year. The wheat yield was 16½ per cent. less than the average of the last 10 years. Oats are at a standstill, barley gave excellent results, and the potato area increased while that of corn declined. Wine grapes are more productive, and the yield of sugar cane was small owing to disease.

The agricultural statistics for New Zealand show that for the last year the estimated wheat yield was 10,257,000 bushels, oats 11,000,000 bushels, barley 688,000 bushels. Wheat shows an increase of 4,534,000 bushels, oats an increase of 1,061,000 bushels, and barley a decrease of 70,000 bushels. The potato yield is estimated at 162,000 tons, a decrease of 16,000 tons. The total area under crop is 1,348,000 acres, an increase of 63,000 acres.

The island of Jersey has a total area of 29,000 acres of which 20,000 acres are under cultivation. Potatoes occupy 7,000 acres, corn crops 2,000, root crops 600, clover 5,000, permanent pasture 4,000 and small fruits 150 acres. The island maintains 12,000 cattle, being 62 head for every 100 acres of the total cultivated area. Guernsey and its dependencies has 12,000 acres cultivated and supports 7,700 cattle, or 66 head per 100 acres.

Reports from India show that, in the central provinces, the wheat area was short of the average, and the crop yield was expected to be 22 per cent. short. In the northwest provinces the deficiency was placed at 5 per cent. below the average crop, and considerably below last year's yield, with a condition of only 70. In Bombay the area was nearly 11 per cent. below the average and the harvest 25 per cent. short.

The official agricultural statistics of South Australia for the season of 1891-'92 placed the land under crop at 152,423 acres, against 163,573 acres in 1890-'91, a decrease of 11,150 acres. The total yield was 6,436,488 bushels, against 9,399,389 bushels for the preceding year, a decrease of 2,962,901 bushels. The average yield was 4 bushels 9 pounds per acre, against 5 bushels 35 pounds for the preceding year, a decrease of 1 bushel 28 pounds.

Samples of New South Wales wines will be sent to the Chicago exposition. In addition to the best known brands of colonial wine in bottles some selected vintages will be sent in wood. The agricultural department of Victoria will exhibit a trophy illustrating the products of their colony, such as cereals, root crops, fiber plants as well as other products. Some choice sheep will be one of the features of the New South Wales exhibit.

The average daily consumption of milk in England is 2.17 pints per family of five persons, or 0.43 pints per head, an average annual consumption per head of 19.75 gallons. The railways bring daily to London 110,000 gallons of milk besides 20,000 gallons supplied from cows in London. The net imports of butter and margarine into England are eight pounds and eight ounces, and of cheese six pounds one ounce per head of the population.

The agricultural department of Victoria offered a prize of $1,250 to be contested for by potato digging machines. There were 53 entries, but only 10 competitors put in an appearance and the contest was practically narrowed down to three machines. The judges decided that the object for which the purse had been offered had not been achieved, but they awarded $125 to a colonial invention, and $100 each to the Hoover and Boss diggers, both American inventions.

The drouth in Australia this year seems to be peculiarly distributed, some districts having ample rain while others had none. For instance, at the junction of the three colonies of South Australia, New South Wales and Queensland, 30,000 sheep were destroyed in one flock, while sheep were dying by hundreds in another and many owners were killing the lambs in order to save the ewes. Out of a load of 100 horses going from one station to another only 39 arrived, the rest dying on the road.

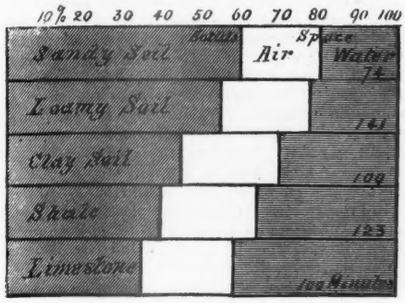
The condition of crops in Great Britain, as ascertained by the *London Times*, was as follows on July 1: Wheat 89.6, barley 94.1, oats 88.7, potatoes 94.4, beans 87, peas 87.3, roots 93.7, grass 73.3, hops 95.8. In England there has been a falling off in the area of wheat even in comparison with the small crop of last year. A greater decrease in wheat is found in Wales, but the increase in Scotland is equal to the falling off in England. Barley shows an increased area in both England and Scotland, and there are more oats. There are fewer potatoes and roots, but more beans and grass. Hay and hops are as nearly as possible the same in area as they were last year.

In Manitoba the area of wheat this year has fallen off by 41,000 acres, but the prospects are for a good crop. The area planted to oats was 333,000 acres, an increase of 27,000 acres over last year. Barley has increased by 7,800 acres and both crops are good. The area sown to peas, rye, buckwheat and corn have also increased, and flax has been given more prominence. The potato area is 2,000 acres less than last year, while the acreage of roots has been doubled and is now 18,000 acres. The condition of horses is first-class except that distemper and influenza prevail in some localities. No disease is reported among cattle except a few cases of black-leg. Fat cattle have nearly all been sold and there are very few store cattle on hand.

Coöperative farming has been successfully tried in New Zealand. Three distinct settlements were formed in the northern island of that colony between 1885 and 1887, the different blocks of land taken up for settlement being 112, 1,900 and 3,221 acres. The total value of the improvements made varies from $15,000 to $30,000. The three settlements numbered in all 87 heads of families, and only five have failed to continue their payments to the government. These payments are in the shape of rent and interest on advances, yet in a few years more each occupier will be the owner of his own farm, having paid for it by easy instalments. The land has been cultivated and planted to gardens, grass, orchards or other crops, dwellings have been built, and the land is gradually being entirely cleared. Each little band of pioneers forms a distinct settlement of its own, and will, undoubtedly, prove to be the nucleus of a large farm area. They assist one another in their work, and, through the easy terms for payment of the land afforded by the New Zealand government, they are thus enabled to coöperate together and establish for themselves permanent and paying homes.

SCIENCE IN FARMING.

MOVEMENT OF WATER IN SOILS.—The weight of water prevents it from creeping upward over the soil particles as quickly as it moves downward. M. Whitney of the Maryland station (R '91) has found that the different substances held in solution by the soil water may increase or diminish its surface tension, and hence vary its amount, its thickness upon the soil particle, and its rate of movement in drainage. The fineness of the parti-



SPACE IN SATURATED SOILS.

cles increases the amount of space in the soil to be filled with air and water. More than half the space of limestone, shale, and clay soil is filled with air and water. These are made of the finest pulverized rock, and the infinitely small particles lie so close together that much of the empty space can be filled with water as shown in the illustration. Loamy and sandy soils are more closely grained, so that the adhesive surface of the particles is too small to hold enough water by capillary attraction to fill the larger spaces between. The total space is much less, however. The most finely pulverized soils weigh the least when dry, but will hold the most water. Thus a heavy clay soil may really weigh light but it is much heavier when soaked. Fine grained soils not only hold the most water, but its drainage through them occupies the most time, as shown by the numbers of minutes at the left of the diagram.

HARVESTING SORGHUM.—Much of the sorghum grown in the Missouri Valley is cut for its nutritious fodder. Sheep, cattle and horses eat both leaves and stalk, and the rich seed is ground with corn for chopped food. The demand for a good quality of sorghum molasses justifies an increased manufacture. D. N. Harper, of the Minnesota station (B. 21), reports that the customary charge for extracting and evaporating sorghum molasses is 15 cents per gallon, making the total cost of production 20 to 35 cents per gallon. The molasses has a ready sale at home at 50 to 60 cents per gallon, or saves an outlay for sugar and glucose syrups, costing from 60 to 80 cents. The manufacture of sugar from the sorghum has not yet proved entirely successful. Experiments show that the cane should be allowed to grow until mature, and not cut unripe for fear of frost. Cane should be harvested as soon as stripped and made into molasses immediately. Allowing stripped cane to stand renders the juice impure, inverts the sugar, and increases the damage by frost. If frost occurs, strip and cut the cane, tie in small bundles, to be so piled in the shade that the air can freely circulate between bundles. Make the molasses soon.

MIXED GRASSES FOR MEADOWS AND PASTURES.—Under natural conditions many kinds of grass grow together, that the sod may be thick under the variations of soil and shade, of growth and bloom, and of dry and wet weather throughout the season. W. J. Beal, at the Michigan station (B. 77), seeded a mixture of tall oat grass, orchard grass, tall fescue, timothy, fowl meadow grass, red clover, mammoth clover, and western wheat grass, which, through three seasons, has yielded two or three times as much per acre as any one of the grasses seeded alone. A. Forbes, at the Henderson grass station, Spring Valley, New York, seeded a permanent pasture mixture of fescues, sweet vernal, meadow alopecurus, rye grasses, meadow oat grass, creeping bent, poas, red top, clovers, and others, with orchard grass as the basis, and through three seasons there has been an average yield per acre of nearly three tons (5,938 pounds) at the first cutting, and of a ton and a half at the second cutting each year. Timothy, under the same conditions, yielded scarcely a ton and a half each season. The average annual yield of a temporary pasture mixture, in which tall meadow oat grass is the basis, was over three tons (6,224 pounds) at the first cutting, and one ton at the second. The yield of the grasses per acre, when growing separately under otherwise similar conditions, was as follows: Creeping bent 1,600 pounds, red top 1,536, tall oat 4,320, yellow oat 1,192, orchard 2,960, hard fescue 2,016, tall fescue 1,632, various-leaved fescue 2,208, sheep's fescue 2,304, fine-leaved fescue 1,344, red fescue 1,536, meadow fescue 1,056, Italian rye grass 3,840, English rye grass, 2,880, wood meadow grass 2,208, fowl meadow grass 1,632, timothy 2,400. In no case did the individual grasses yield as much cured hay per acre as the mixtures.

WHEN TO CUT AMERICAN CORN FOR FODDER.—Though corn is generally cut for fodder, or for silage, when the kernels begin to glaze, W. H. Caldwell at the Pennsylvania station (B. 11) found that small varieties increased in food-content until nearly mature. In large varieties, however, the gain is so small that it is better to cut while the leaves are tender. Fully one-half of the total food material in corn fodder was found in the ears, one-fourth to one-third in the leaves and husks (stover), and the rest in the stalks. As the cobs contained one-tenth, and the butts of the stalks contained four to five times as much as the tops, it is inferred that there is considerable loss when the stalks are fed whole, which might be saved were they cut fine before feeding, or preserved in silos.

THE VALUE OF WHEY AS A PIG FOOD.—One hundred pounds of milk contain about 13 pounds of solids. In butter making, the fat only is removed. In cheese making, the casein and most of the fat is removed, leaving in 90 pounds of whey, about 11 ounces of albumen, two ounces of casein, seven ounces of fat, 10 ounces of ash and 4.3 pounds of milk sugar. W. A. Henry, at the Wisconsin station (B. 27), found that whey alone would not keep pigs alive. Pigs, fed on a water slop of corn-meal and shorts, ate 552 pounds of the dry mixture for 100 pounds of weight gained. When sweet whey was added to the grain slop, in proportions varying from two pounds of whey to one of grain, up to 10 pounds of whey to one of grain, there was a marked saving in the amount of grain required for good gains. A saving of 100 pounds of the grain mixture was made by using 760 pounds of whey. Thus, a gallon of whey is worth about one pound of grain. Cotton-seed, pea, or linseed meal, or other grain foods, should be mixed with whey for growing animals. More corn may be fed as the animal approaches maturity.

DETASSELING CORN.—The reports of experiments on detasseling maize, continue to omit statements of the yield of similar cornfields not detasseled. The yield of the detasseled rows are compared with the yield of the perfect rows between, abnormal stalks being compared with abnormally situated stalks. Detasseled fields, not rows, should be compared with untreated fields. The New York Cornell station has repeated its experiment of detasseling alternate rows, and G. C. Watson reports (B. 40) that the detasseled rows yielded nearly two per cent. less than the perfect rows between, but as the normal yield is not stated, no conclusion can be drawn as to whether both sets of rows might not have yielded more if untouched. In a second plot, three rows were detasseled, and the fourth row left perfect, the latter yielding nearly one per cent. less than a detasseled row, but the yield of a normal row is not given. An analysis of ripe tassels by H. Snyder shows that the pollen from an acre of the corn contained two and one quarter pounds of nitrogen, and that its anthers contain over three and three fourths pounds nitrogen. The anthers and pollen form so early, that most of this nitrogen is contained in the young tassels which are removed, and there is also a loss in the sap which exudes. So the stalks must lose nitrogen in any case, but in all cases it falls on the ground with little loss to the field. At the Illinois station, G. E. Morrow and F. D. Gardner (B. 20) detasseled alternate rows with very similar results. At the Maryland station, A. I. Hayward (R. '91) detasseled two rows, leaving every third row perfect, and the detasseled corn yielded nearly 10 per cent. less than the perfect corn between. C. E. Thorne and J. F. Hickman, at the Ohio station (N. B. 99), detasseled alternate rows, and the detasseled rows yielded over nine per cent. less than the perfect rows between. At the Nebraska station, C. L. Ingersoll (B. 19) detasseled alternate rows on one plat, and properly compared the yield of this detasseled plat with the normal yield on an otherwise similar untreated plat, and found that detasseling reduced the normal yield twenty-two per cent.

SILAGE IN MOIST CLIMATES.—Though the fermentation in the silo destroys much of the nutrition in stock food, it is often so difficult to air-dry hay and fodder properly and proteet these from wet weather that C. S. Plumb, of the Indiana station (B. 40), recommends the ensiling of American corn directly from the field planted to grow ripe ears. Ten to fifteen tons of the green fodder are yielded per acre. Corn contains the most nutriment when the grains begin to glaze, or are well dented. Advocates of the silo recommend its use as an adjunct of intensive, high-class farming. Where properly preserved silage is fed, the same area of land will maintain a much larger number of animals than where dry feed is used. Silage is more succulent and generally more palatable than dried fodder. Clover or corn may be placed in the silo during damp weather, where it would be impossible to air-dry it. A great deal of food may be stored and protected in the small space of the silo. Silage is moist, like green food, and thus serves as a partial substitute for roots or green grass. Silage is fed with less waste than whole, coarse fodder.

A DANGEROUS WEED.—The Russian or Tartar thistle, Salsola Kali var. Tragus, is becoming a very dangerous weed in the Missouri Valley. It is a Russian variety of the common saltwort found on the sands of the Atlantic coast of the United States. The introduced weed is an annual, comes

THE DANGEROUS RUSSIAN THISTLE.

up even after the wheat is cut, blossoms, ripens seed, breaks at the surface of the ground, and is carried by wind, over all the country, as a tumble weed. It grows into a rounded, prickly, green bush from two to six feet in diameter. The sharp pointed leaves become as hard as thorns and cut the legs of the plow horses. J. N. Rose of the U. S. Department of Agriculture points out the danger ous character of this weed and recommends (R. '91) the killing of the young plants by plowing under, and other means. South Dakota has suffered most from the new pest which is rapidly spreading.

THE PROTEIDS IN AMERICAN CORN.—Nearly one-tenth of the maize grain consists of nitrogenous compounds. These have been analyzed by R. H. Chittenden and T. B. Osborne of the New Haven, Connecticut station (R. '91) and found to contain several distinct proteids well characterized in reactions and composition. A ten per cent. solution of common salt extracts from grains of corn, maize myosin similar to muscle myosin, maize vitellin similar to egg vitellin, and a maize globulin similar to blood globulin. Both water and brine extracts of American corn meal contain, in addition to these three globulins, two albumin-like bodies, coagulable by heat. The chief proteid in the maize kernel is maize-fibrin or zein, much like blood fibrin, and soluble in warm dilute alcohol, but insoluble both in water and in absolute alcohol. Zein is characterized by a high content of carbon, by its resistance to the action of dilute alkalies, and by the ease with which it is converted into an insoluble modification on being warmed with water or very weak alcohol.

Velvet Grass.—H. W. Woodruff, Lane Co., Oregon: The long, silvery-colored spike of grass you send is known by many local names, such as "Velvet-grass, meadow soft grass and velvet mesquite" but its botanical name is *Holcus lanatus*. It is not a native of this country but was introduced from Europe many years ago and has become naturalized almost everywhere on farms where other kinds of grasses are sown. It is a perennial with stout, erect stems two to three feet high; the leaves and stems densely clothed with soft hairs like velvet. It grows best in moist, low ground but will thrive in poor cold sands and clays. It is a very showy grass and likely to attract attention on this account, but it is not in good repute as an agricultural grass in Europe where it is best known, and in our older States along the Atlantic it is considered of little or no value for either pasture or hay. In nutritive properties it ranks very low and we have many native grasses that are far superior to it for any purpose. It is better than no grass at all, and should only be encouraged where better species will not, or cannot, be grown.

Plum Insects and Diseases.—New Subscriber, New Haven, Ct.: The greatest enemy of the plum is a small, dark-colored snout beetle, generally known as the plum curculio, and whose habits are so well known that it is scarcely necessary to refer to them at this time. Many preventives, and ways of catching and killing this pest have been recommended and tried during the past century, but none have been more than moderately successful, but of late years spraying the trees with poisons such as Paris Green and London Purple have given better results than anything else, and bids fair to prove efficacious when properly applied. The best way to apply is in the form of a spray, mixing one pound of the poison to 200 gallons of water, adding five pounds of pure stone lime to the mixture. The trees should be sprayed when the fruit is about as large as peas, repeating the spraying every two weeks as long as any curculios are found about the trees. If black-knots appear on the branches, cut away the affected branch and burn it, then spray the trees with the Bordeaux mixture, or wash them in winter with a strong solution of sulphate of iron.

Cucumber Vines, Pear Trees.—Jesse W. Peck, Camden Co., N. J.: The first flowers appearing on cucumber vines are usually the staminates, the pistillate or fruitful ones appearing a few days later, and this may have occurred with your vines, hence your fears of unproductiveness. We have never seen healthy cucumber vines that were wholly barren, but some varieties bear more fruit than others. Extra vigorous growth may delay fruiting but the crop will be larger and better when it does come. Your pear trees may be in the same condition as your cucumber vines, as extra growth does not promote early fruiting and severe pruning will not help them, but summer pinching, that is, nipping off the ends of the most vigorous shoots with your thumb and finger will tend to check extra growth of wood and the development of the fruit spurs. It will be rather late when you read this to do much in the way of summer pruning, or pinching, but keep the matter in mind and practice it next July, or not later than the first week in August.

Seedling Peaches. — S. Rankin, Douglas Co., Kan.: There are, no doubt, many of our old standard varieties of the peach which will very nearly reproduce their type from seed, especially if the seed be taken from isolated trees and where the blossoms have not been fertilized from inferior or widely differing varieties. But it would be difficult to obtain seed enough of this kind, or produced under these conditions, to raise an orchard of any considerable size; and, for market purposes, a mixed lot of fruit is not what is wanted. If a man is to ship any one, two, or more, varieties to market, he must keep each separate, and each basket should be filled with fruit of an equable degree of ripeness, and this cannot be done unless there is a certain number of trees of each variety. If there was an absolute certainty of varieties reproducing themselves by seed, then we might return to the primitive mode of propagation of this fruit and plant orchards of seedlings only, but it appears to be a law of nature to vary more or less in all reproductions among plants and animals. The only way to insure uniformity in multiplying trees of any variety is by the usual modes of propagation by budding, grafting, layering, etc.

Rose-Leaf Slug.—Mrs. D. M., Sussex Co., N. J.: The small, slender, greenish worm found so abundant feeding upon the leaves of your roses is the larva of the rose saw-fly, a common and very destructive pest, but one very easily destroyed with powdered white hellebore. The slugs feed on the underside of the leaves during the day, but in the evening they may often be found on the upper side. But in applying the hellebore it is well to use a small hand bellows, in order to dust the leaves well on both sides. Ten cents' worth of this insecticide will destroy the slugs on a hundred large bushes. Apply when the leaves are wet with dew, and, if used as soon as the slugs make their appearance, the flowers on the bushes will not be injured in the least; in fact, if the leaves are kept free from insect pests, the flowers will be larger than if the foliage has been partly or wholly destroyed.

Pasture for Poultry.—E. J. B., Nashville, Tenn., who wishes to know what he can "grow best" for the use of chickens on about half an acre, partially planted with quite young trees, does not state whether the chickens are to be allowed to run upon this half acre or not. If they are not, we would suggest planting a portion with corn and sowing the larger part of the remainder with barley, reserving a small portion for the growth of sugar beets. If the chickens are to have the run of the lot, there is nothing better than red clover, provided, of course, that clover will grow well in his locality. If it will not, then sow to oats and rye, which furnish very good forage for the chickens while the crops are young. By sowing a portion of the field at a time, that is, by making successive sowings, there will, all the season, be some young shoots that will be eagerly cropped by the chickens.

Planting Elm Trees.—F. K. B., Iowa Co., Mich.: We would not advise you to plant elm trees of any species or variety until some cheap and efficient means has been discovered for destroying the imported elm leaf-beetle. Thousands of trees have been destroyed by this pest in some of the Eastern States during the past few years, and this pest of the elm seems to be as abundant and ravenous as ever. It is true that it attacks all of the European species and varieties in preference to the American elms, but when there are not enough of the former to supply it with food it passes to our indigenous elms. The American elm may be the queen of our deciduous trees when in perfect condition, but when its leaves are skeletonized by the elm beetle, it is far from being even a respectable looking queen.

Preserving Grapes.—I. L. S., Payson, Utah, writes us: "Last January a friend gave me several bunches of fine grapes that were quite as fresh and sweet as if just plucked from the vine. They had been packed away in sawdust, each bunch by itself, and, although preserved so long, would have kept in good condition much longer. Here is a field for grape grower's experiments. Try different varieties and several kinds of sawdust, wheat bran, corn meal, buckwheat bran, etc., and ascertain what variety and in what substance the grapes will best keep in good condition for the market. Dip the cut stems in sealing wax."

Apple Leaf Blight.—F. W. H., Pierre Co., Wash., sends us leaves of apples that are attacked by a fungus producing what is generally known as leaf blight. There are several fungi that prey upon the apple, the most common being the scab, rust and mildew. These fungi propagate by means of minute bodies called spores which are so small and light as to be invisibly borne from place to place by the wind. When these spores fall upon healthy leaves congenial to them they grow and reproduce the disease. Fungicides are substances that, when coming in contact with these spores, either kill them or prevent their germination. It follows from this that fungicides do not cure a disease in the sense of restoring any sick part to health, but checking the spread of the trouble, the plant if well situated will overcome the attack and become strong again. The most important point in connection with the use of fungicides is to apply them early. There are several remedies employed, the following being very effective: Carbonate of copper, five ounces, ammonia water, three quarts, water, thirty gallons. Wet the carbonate of copper in water, add the ammonia and dilute for use. Spray the trees early and often.

Water for Irrigation.—J. M. Starbuck, Orange Co., Fla.: The use of driven wells for procuring irrigation water has been found entirely practicable, and by having several close together, and connecting them all with one large pipe and pump, a large quantity of water has been secured, at a small expense. This has the same effect as to make one large well at a greater cost. A windmill is the cheapest power, and in Florida the wind rarely fails to blow sufficiently for this purpose. Otherwise a steam engine, of two to five horse power, may be used. It may be necessary to have a reservoir of sufficient capacity to hold a day's supply, and then pumping may go on during the nights. All this is mentioned in a useful book, "Irrigation for the Farm, Garden and Orchard," which costs $1.50 from Orange Judd Co.

Keeping Celery.—H. S., Berger Co., N. J., writes us: "Last year I made a mistake in saving my celery, which was nearly all lost by pitting it instead of keeping it dry under cover. The cause I have learned is the attack of a bacterium, described by Dr. B. D. Halsted in the last number of the AMERICAN AGRICULURIST. This parasite has a great appetite for celery, and, as usual, for the best and tenderest kinds. It soon reduces the stems to a mass of black pulp, and so destroys the whole crop very quickly. Heretofore I have saved my crop by packing in barrels and keeping it in a cellar, and if it is covered and kept cool, there is very little escape of moisture from the stems, or the leaves that are left on them. Water is destructive to stored celery, so that if kept out of doors the pit must be perfectly dry."

Pear-blight Beetle on Apricots.—J. Cohn, Union Co., N. J.: The withered young shoots of the apricot branch you send, have been killed by the pear-blight beetle which deposits its eggs just below the bud, and when hatched the young larva burrows up along the pith of the young twig as it grows, but soon eats so much that the twig is suddenly killed. The larva becomes a pupa, in the bottom of the burrow, and escapes as a beetle through a very small hole in the tree in June or July. During August it deposits its eggs near the buds which will become twigs the next year. All twigs which show any signs of the blight should be immediately cut off below the injury and burned to kill the beetles in the burrows.

Gathering Sumac.—Paul Noble, Shiawassee Co., Mich.: The greater part of all the sumac gathered in this country is pulled by negroes and whites in the South where they get a very small pittance for their labor. After the leaves are gathered and thoroughly dried, they are taken to the sumac mills and ground into a fine powder. This is packed in tight cloth sacks and either sold to local dealers or to those in our larger cities. American sumac does not command as good a price as the imported article, some dealers claiming that it is inferior in strength, while others say that it is because it is not so carefully collected, dried and ground. The price is variable, like other products, and the range is from $20 to $40 per ton for a good article of American sumac in this market. We very much doubt if you could earn more than 50 cents per day in gathering sumac in Michigan.

Seeding of Cabbage Plants.—Subscriber, Buffalo, N. Y.: The reason why your cabbage plants have run up to seed instead of forming heads as usual, may be poor seed gathered from plants left in the field to run wild, and the seedlings raised therefrom have reverted back to the original or wild type of the cabbage as found along the seashores of Europe. The heading of the cabbage is the result of long cultivation, selection and domestication with their accompanying manipulation, such as transplanting from the seed-bed,

and allowing room between the plants for lateral expansion of the leaves, then transplanting again when the heads are formed, which checks the immediate elongation of the central stalk into a fruiting stem. These and other unnatural processes have resulted in a monstrosity in this plant known as a cabbage head, but in others as a cauliflower or a broccoli, as all in their wild state are one and the same. In mild climates cabbages, turnips, carrots, celery, etc., may be left out in the field over winter, and often are, and in spring the plants will throw up seed stalks and produce a great crop of very plump but degenerated seed.

Diseased Crab-Apple Tree.—L. M. Stanton, Berkshire Co., Mass.: The crab-apple leaves you sent appear to be dying, or drying up, for the want of sufficient sap to keep them green and fresh, but how or why the supply has been cut off we are unable to determine. It may be that the apple tree borer is at work in the stem near the ground and has nearly or quite girdled it, thereby preventing the ascent of the sap, or the roots of some forest tree like the elm, has encroached upon those of the apple tree drawing to themselves the moisture necessary to the health of the less vigorous tree. Examine the tree carefully, also dig down to the roots and see if you cannot discover the cause of the leaves drying up and dropping off. If borers are at work cut them out and apply grafting wax to the wounds made in their removal. Also cut in the top of the tree or thin out the branches in order to lessen the demand on the roots for sap and moisture. Spraying may be of use also.

Clover in Washington.—F. W. Mason, Spokane County, Wash.: It is very doubtful if you would make a success of clover culture in your dry, hard soil, especially if you expect it to grow strong enough to plow under for green manuring. Why not try a small plat as an experiment and determine from actual experience what it will do? The large red, a peavine clover, would be the best and most likely to succeed. But ordinary field peas are as valuable as clover for plowing under as a fertilizer and two or three crops may be grown in a season, while it will take two to get one good stand of clover even under favorable conditions. The clovers all belong to the Pea Family of plants and contain almost identically the same chemical elements as the common cultivated varieties of the pea, and the latter will answer every purpose for enriching the soil as well as the former, but the rank growing varieties of the pea are a little more difficult to cover with the plow if sown broadcast, and for this reason it is better to sow the seed in straight rows. The vines should be plowed under as soon as the pods are fairly well filled with seed.

Hop Culture.—Edgar Ratschy, Clarke County, Wash.: Land slightly sloping to the north might answer very well for hops provided it was otherwise suitable. The same land might also answer for apples, but you do not give us any information in regard to its condition whether wet or dry, light or heavy, or whether naturally rich or poor. Nurserymen do not usually keep hop-plants for sale, but they are often to be obtained at the hop yards of which they are many in the Pacific States. As for the best varieties of apples to plant ask those who have had some experience in raising apples in the region about you, or write to some one of the many nurserymen and fruit-growers in Oregon. We could give you a list of varieties recommended by the "American Pomological Society" for both Oregon and Washington, but location and soil must be favorable to insure their success.

Material and Size of Poultry Houses.—L. S., Beloit, Kansas, writes us: "Which material is the best for making a good, warm and healthy poultry house, stone or frame? I have plenty of good stone on my place which will not cost me anything except the quarrying and hauling. The lumber is quite dear here. What should the size of such a house be to contain about 300 chickens?" We prefer a wooden building for a poultry house; consider it better than a stone or brick one, unless the latter is laid with double walls with an air-space between. But if one has the stone and can get the house much more cheaply by using this material, there is no reason why he cannot build a good house with it. The usual rule is to allow each fowl 10 feet of floor space, which for a flock of 300 would be 3,000 square feet or a building 100x30 feet. We have known fowls kept very successfully where six square feet for each fowl was allowed, and if this were the rule 1,800 square feet would be sufficient, or a building 100x18, or 30x60 feet in size. With strict attention to cleanliness we think that even five square feet to each chicken would be sufficient and that a building 15x100 feet would accommodate the three hundred. But as size of house is diminished, the amount of care must be increased if equally good results are to be expected.

Southdown Sheep.—Sec'y S. E. Prather, Springfield, Illinois, writes: "Breeders of Southdowns in England have, during the past year, established a flock book for the registry of this breed of sheep in England, which is recognized by the United States Government in its late rules on the importation of animals for breeding purposes. Our importers may hereafter expect fuller and more accurate pedigrees, with much less trouble in securing them. The keeping of a record of ewes in Great Britain, is being adopted by some enterprising breeders, and a general advancement in this regard may be looked for."

Fish as a Fertilizer.—J. W. Dodge, King Co., Wash.: The fish which are so abundant in the Washington streams will make an excellent fertilizer very rich in nitrogen. Air-dried and ground they are used as one of the most valuable substances in commercial fertilizers. The dried fish may be plowed under, or used to top-dress pastures, but are so rich that they should be thinly spread. The fresh fish may be composted with earth, yard manure and lime. The addition of unleached wood ashes to the compost furnishes enough potash to make a complete fertilizer. Composting with lime will remove the strong odor.

Other Large Eggs.—Robt. R. Shull, Caroline Co., Md., sends us the shell of a hen's egg which is nine and five-eighths inches around the long way and seven and one-half inches the short way. It contained inside a second shell of ordinary size with perfect white and yolk, but between the two shells there was only the white. Rev. H. T. Miller, North Hastings, Canada, writes that his Light Brahma hen laid an egg weighing seven and one-half ounces, and measuring eight inches in circumference. It also contained a second shell within. L. Kostenbader, Stephenson Co., Illinois, found a hen's egg which measured 10 inches one way and eight inches the other and weighed seven and one-half ounces. Inside of this egg was a second shell.

Dutch Belted and Holstein Friesian Cattle.—John S. Nangel, Bedford Co., Pa.: Both these breeds are black and white. The belted cattle are evenly and uniformly marked by a broad belt all around their bodies, while the Holstein Friesian are irregularly spotted.

Curing Hens from Eating Eggs.—Subscriber, Netawaka, Kansas, inquires how to break hens from eating their eggs. An effective plan is to take four or five eggs, remove their contents by breaking a small hole in the side, and then fill the shells with the following mixture: Ground mustard five parts, cayenne pepper one part, wheat flour one part; mix and add just enough water to make the mass stick together. Place a couple of these filled eggs upon the floor and they will be eaten greedily, then give one, or more, of the others, as needed. Usually three or four eggs will be sufficient for a flock of a dozen. Repeat the dose on the following day if necessary. Usually it will not be necessary to do so. It will be well, after this, to keep two or three china or clay nest-eggs on the floor of the house for the hens to pick at if they wish to. Nests of twelve inches in depth should be provided for the hens, if the boxes are on the floor. Nest boxes that hang against the wall are still better. Use no nest-eggs in the nests; they are unnecessary and often cause broken eggs.

Saving Egg-Plant Seed. — E. E. Bennett, Alachua Co., Fla.: In saving egg-plant seed, the fruit should be allowed to remain in the garden until fully ripe, then gathered, and if the pulp is at all soft, scrape it out with the seed and throw into a barrel, or other light vessel, stirring daily until the mucilaginous coating about the seed will slip off, when the seed are thrown into pure water. Proceed to work out the seed, using plenty of water, in order to leave it clean and bright when dried in the shade, but where there is a good circulation of air. A little water added to the pulp when it is put into the barrel, will hasten its decomposition and free the seed. The only danger is allowing the seed to remain in the pulp until fermentation has proceeded so far as to soften the shell of the seed. But if the seed are examined every day and the pulp stirred to prevent it from becoming moldy on top, you will have no difficulty in determining the proper stage for washing. All the good, plump seed will fall to the bottom when freed from surrounding pulp, as occurs in cleaning tomato and similar seeds of the same order of plants.

Hens Eating Dough.—C. H. T., Worcester, Mass., asks: "What shall I do to my hens when they will eat nothing but dough containing bran and corn meal? They always act hungry and are fed but twice a day." The most obvious answer would be to give them the dough, but we presume the writer wishes to change the feed. If he does, the quickest way will be to give the hens no dough at all, but to feed in small quantities such food as he wishes them to eat; after a short time they will eat the new food, even though they at first refuse.

Best Winter Layers.—A. C. C., Amberly, Va., desires to know which would be the better winter layers, good hens one year old last spring, or chickens hatched early this spring. If the chickens were hatched early enough to begin laying before cold weather set in we should prefer them; otherwise, the hens would probably be the better layers. As a rule, because pullets are not sufficiently early, yearling hens are better winter layers than pullets, beginning in the early part of the winter to lay, provided they are warmly housed and suitably fed.

Small Flowered Sensitive Pea. — Subscriber, Hudson Co., N. J.: The small delicate plant which you find growing along the roadsides is not the true sensitive plant of the South, but is known as the small flowered sensitive pea (*Cassia nictitans*). The leaves are somewhat sensitive, but not as much as the true sensitive plant (*Mimosa pudica*), although it belongs to the same family.

Poplar and Clover.—Geo. A. Sunderland, Marshall Co., Ind.: Whatever may have been the species of tree you wished to have identified last spring, the leaves you now send are those of the large American aspen (*Populus grandidentata*). It is a common tree in our Northern woods with leaves much larger and of a different shape from the trembling poplar or quaking aspen. The immature head of clover and leaves without the white spot in center is the zigzag clover (*Trifolium medium.*) It is not so common as the red clover, although it has run wild in some of the older States, and the seed is gathered with those of other species.

Apple-Tree Pest. — A. J. Zany, Arapahoe Co., Col.: The small caterpillar rolling up the leaves of your apple trees and eating out the buds is probably one of several species of *Tartrix*, known to attack the apple, pear, and closely allied fruit trees. If we succeed in breeding the moths from the caterpillars you sent, we may be able to determine the species and later give its name. The best way to destroy these pests is to spray the trees early in the season—just as the buds are expanding—with London purple or Paris green, using about three-fourths of a pound of either, with 100 gallons of water. Should a second breed appear in summer, spray the trees again. Whale oil soap has also been recommended for destroying the Tartrices, or bud moths, but the poisons named are now considered the most efficacious.

Sparrow Eggs.—Wm. G. Walker, Tioga Co., Pa.: The color of sparrow eggs is generally of a dull, light green, spotted and streaked all over with dusky brown, but a general resemblance may be traced. Ten-twelfths of an inch long by seven-twelfths broad is the average size. Five or six is the usual number of eggs, and three broods are often reared in one season.

Weeds at the World's Fair. — B. D. Halsted of the New Jersey station at New Brunswick, is preparing, for the World's Columbian Exposition, an exhibit of all the weeds of the United States. Volunteer assistants can materially aid this work by writing him for directions for collecting the worst weeds in their localities. The weeds must be gathered this summer, and sent in by December. The exhibit will probably lead to extended coöperative effort against the encroachment of dangerous weeds.

OUR LIBRARY CORNER.

Book Reviews.

THE RURAL ECONOMY AND AGRICULTURE OF AUSTRALIA AND NEW ZEALAND. By Robert Wallace. London: Sampson Low, Marston & Co. 1891. 541 pp., il., 8 vo., cloth.

Alfalfa or lucern is the most important forage plant of Australia and New Zealand. In much of the wheat-growing area of South Australia, the dry climate prevents the profitable growing of the usual forage plants, and the great hay harvest time is in December, when green wheat is cut just as it reaches its heaviest growth. It cures into a very nutritious fodder, on which farm horses thrive without any additional grain food. Instead of reaping or heading the ripe wheat, an arrangement of beaters and tines with an outer casing of sheet iron, strips the grain from the heads and carries it along, wastefully leaving the straw standing, to be afterwards burnt where it grew. In Australia the Merino occupies, among sheep, the prominent position held by the Shorthorn, among cattle. Wool and beef are staple products. On the open range one man cares for 5,000 sheep. The shearing is done from July to December, frequently by machines which can clip 200 sheep in a day. Prof. Wallace describes, in interesting language and superb illustrations, every detail of Australasian farming. Sold by the Orange Judd Co. Price, postpaid, $10.

THE AMERICAN REPUBLICS AND COLONIES. Commercial Information. Prepared by the Bureau of American Republics, Washington, D. C., 1892. 286 pp., 8 vo., paper.

For some time the Bureau of American Republics has been furnishing to the press of the United States, Mexico, Central and South America, the West Indies and Europe, daily bulletins of information concerning current events in the American Republics and Colonies; their progress, and the development of their resources, their industries, and commerce. This volume contains such of this information as is of permanent value, classified and arranged for ready reference. The building up of our home markets in America should be furthered in all possible ways. Reference books of facts like these are especially needed.

THE NORTH AMERICAN PYRENOMYCETES. A Contribution to Mycologic Botany. By J. B. Ellis and B. M. Everhart. With 41 full-page tinted Original Illustrations by F. W. Anderson. Published by the Authors, Newfield, N. J., 1892. 793+164 pp., 8vo., cloth, $8.35 postpaid.

The recent progress in the study of the fungus diseases of plants makes this work a necessity to the botanist. Over 2,500 species of spore-fruited fungi are accurately described and their host plants given. The plates, drawn from nature by our late associate, show how full of promise was his short life. The scientific accuracy of the volume makes it a standard authority on these plants.

FARMYARD MANURE. Its Nature, Composition and Treatment. By C. M. Aikman. Edinburgh and London: Wm. Blackwood and Sons, 1892. pp. 65+xiii. 16mo., cloth.

Every farmer may not use commercial fertilizers, but every farmer should use the manure from his barnyard. How to do this most profitably is described in this short treatise on what is still the most important of all manures. This book will form one chapter in a large work on Soils and Manures, which the author will soon have ready for publication. Sold by the Orange Judd Co. Price, postpaid, 75 cents.

JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND. Third Series. Published Quarterly. Vol. III., Part 2, June, 1892. London: John Murray. 438 pp., il., 8 vo., paper.

This volume contains articles on Farm Vermin, The Evolution of Agricultural Implements, Desirable Agricultural Experiments, Contagious Foot-Rot in Sheep, Variations of the Four Course System, Trials of Plows, Wild Birds in Relation to Agriculture, Animal Parasites, and the Fixation of Nitrogen. Sold by Orange Judd Co. Price, postpaid, $2.

THE GARDEN ANNUAL, 1892. Containing Seasonable Work for each month; Flowers, Fruits and Vegetables Procurable each month; New Plants; Lists of Nurserymen, Seedsmen, Florists and Horticultural Builders in all parts of the World; Lists of Gardens, Country Seats and Gardeners in Great Britain and Ireland. London: W. Robinson. 380 pp., 16 mo., paper.

The directory feature of the Garden Annual will be found very useful. The scientific names of the new plants are given with their propagators and date of introduction. The list of flowers, fruits and vegetables in the market each month, will be helpful to many households. Sold by the Orange Judd Co. Price, postpaid, $1.

NEW LAID EGGS. Hints for Amateur Poultry-Rearers. By Mrs. H. A. De Salis. pp. 102, 16mo. cloth. London and New York: Longmans, Green and Co., 1892.

The author has been very successful in raising poultry and eggs, and condenses the results of her valuable experience in this volume. Many quotations are made from well known poultry-raisers, and from *Farm and Home*. Special directions are given for securing winter eggs. Sold by the Orange Judd Co. Price, postpaid, 60 cents.

LIVE STOCK JOURNAL ALMANAC, 1892. With Numerous Animal Portraits, Fair Lists, Breeder's Directory for Great Britain and Ireland. London: Vinton & Co. 270 pp., il., 8 vo., paper.

This valuable publication contains 43 original articles, on the leading breeds of domestic animals. The articles on horse breeding are novel and thorough. Dr. George Fleming furnishes a very useful treatise on the care of horses' teeth. Sold by Orange Judd Co. Price, postpaid, 75 cents.

ILLINOIS HORTICULTURAL SOCIETY. Transactions 1891. Edited by the Secretary, A. C. Hammond, Warsaw.

This volume contains the amended Constitution and By-laws, fruit-lists and the proceedings of the State, District and County societies. Among the notable subjects are: Spraying, by Wm. Stahl. Canning Fruits, by Nellie Richl. Cold Storage, by E. S. Levy. Evaporating Fruit, E. G. Mendenhall.

Recent Publications.

AUSTRALIAN DEPARTMENT OF AGRICULTURE. Report 1891. Peter McLean, Under-Sec'y, Brisbane. 260 pp., il., 8vo., paper.

FARM IMPLEMENTS AND MACHINES. Guide for Selection and Purchase. In Russian. St. Petersburg: V. W. Tichernieoff, 1892. 214 pp., il., 12mo., paper.

BALANCE OF TRADE. Replies to Henry George and Edward Bellamy. By Henry Martin, Exton, Tasmania. 80 pp., 8vo., paper, 50 cents.

SCIENTIFIC ALLIANCE OF NEW YORK. Directory 1892. N. L. Britton, Columbia College, Sec'y. 34 pages, 8vo., paper, 25 cents.

CORNELL UNIVERSITY. Report 1892. College of Agriculture. I. P. Roberts, Director, Ithaca, N. Y. 8vo.

KANSAS CROP REPORT. Martin Mohler, Sec'y, Topeka. 8vo.

NEW JERSEY CROP REPORT. Franklyn Dye, Sec'y, Trenton. 8vo.

MISSOURI HORTICULTURAL SOCIETY. Report 1891. By L. A. Goodman, Sec'y., Westport, Mo. 401 pp., il., 8 vo., cloth.

HOME AND SCHOOL TRAINING. A book for Parents, Teachers and School Officers. New Edition. By Hiram Orcutt. Boston: Thomson, Brown & Co., 1892. 297+12 pp., il., 16 mo., cloth, $1.

SALT RIVER VALLEY, The Fruit Belt of Arizona. By Shultz Franklin, Tempe. Pamphlet.

WISCONSIN FARMERS' INSTITUTES, 1891. Edited by Sup't W. H. Morrison, Madison. 320 pp., il., 8 vo., paper.

KANSAS BOARD OF AGRICULTURE, June 1892. M. Mohler, Sec'y, Topeka. Pamphlet.

MARYLAND WEATHER REPORT. Soils and Crops. Wm. B. Clark, Director, Baltimore. 20 pp., 4 to., maps.

NEBRASKA BOTANY. Report 1891. By Ch. E. Bessey, State Botanist, Lincoln. 16 pp., 8 vo., paper.

NORTH DAKOTA WEATHER SERVICE. N. H. Fallon, Director, Bismarck. Pamphlet.

LINNAEAN SOCIETY OF NEW YORK. Report 1892. Arthur H. Howell, Sec'y.

AGRICULTURAL EXPERIMENT STATION BULLETINS.

ALABAMA—At Uniontown. Cattle feeding (B. 15).

ARKANSAS — At Fayetteville. Farm manures (B. 19).

CALIFORNIA—At Berkeley. Alkali lands, irrigation and drainage (R. '91).

DELAWARE — At Newark. Hand-power cream separators (B. 17).

GEORGIA—At Experiment. Air and soil (B. 17½).

KANSAS—At Manhattan. Experiments (R. '91).

LOUISIANA—At Baton Rouge. Experiments (B.17). Geology of the hills (B. 18).

MASSACHUSETTS — At Amherst. State Station: Feeding milk cows (B. 42). Hatch Station: Weather (B. 42m).

NEW JERSEY—At New Brunswick. Fertilizers (B. 88).

NEW MEXICO—At Las Cruces. Scale insects (B.7).

NEW YORK — At Geneva. Fertilizers (B. 42). At Ithaca. Cultivated native plums and cherries (B. 38). Creaming and aerating milk (B. 39). Detasselling corn (B. 40).

NORTH DAKOTA—At Fargo. Mustards (B. 6).

RHODE ISLAND—At Kingston. Fertilizers (B. 16).

OHIO—At Columbus –Detasseling corn (N. B. 99). Fourth successive crop of wheat (N. B. 100).

SOUTH DAKOTA—At Brookings. Weather (B. 31).

WYOMING—At Laramie. Insecticides (B. 7).

AUSTRALIA — At Melbourne. Rust in wheat. Agricultural education. Manures. Practical science. Scientific agriculture. Silos and silage.

BRAZIL — At Campinas. Coffee, soils, alfalfa (R. '91).

CANADA—At Guelph. Feeding steers (B. 70). At Toronto. Crops (B. 38). Silos and silage. (B. 39). Crops and stock (B. 40). At Winnipeg. Crops and stock (B. 34).

UNITED STATES GOVERNMENT PUBLICATIONS.

DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.—Milk fermentations and their relation to dairying (F. B. 9). Flax culture for fiber (F. R. 4). Area of corn, potatoes and tobacco; Conditions of growing crops (S. R. 97). Experiment station record (II, III). Organization lists of the agricultural experiment stations and agricultural schools and colleges in the United States (E. S. B. 12). Monthly weather review (4 XX). Magnetic observations (W. B. B. 2). Relations of soil to climate (W. B. B. 3).

AGRICULTURAL COLLEGE CATALOGUES.

ALABAMA—Pres. W. L. Brown, Auburn.
ARIZONA—Chanc. M. P. Freeman, Tucson.
ARKANSAS—Pres. E. H. Murfree, Fayetteville.
Princ. J. C. Corbin, Pine Bluff.
CALIFORNIA—Pres. M. Kellogg, Berkeley.
Pres. W. T. Randall, Ontario.
COLORADO—Pres. A. Ellis, Fort Collins.
CONNECTICUT—Pres. T. Dwight, New Haven.
Princ. B. F. Koons, Mansfield.
DELAWARE—Pres. A. N. Raub, Newark.
FLORIDA—Pres. F. L. Kern, Lake City.
Pres. T. D. Tucker, Tallahassee.
GEORGIA—Pres. H. C. White, Athens.
Chanc. W. E. Boggs, Dahlonega.
Pres. J. C. Lynes, Milledgeville.
Chanc. W. E. Boggs, Thomasville.
Pres. L. W. Haskell, Cuthbert.
ILLINOIS—Regent T. J. Burrill, Champaign.
INDIANA—Pres. J. H. Smart, La Fayette.
IOWA—Pres. W. M. Beardshear, Ames.
KANSAS—Pres. G. T. Fairchild, Manhattan.
KENTUCKY—Pres. J. K. Patterson, Lexington.
Princ. J. H. Jackson, Frankfort.
LOUISIANA—Pres. J. W. Nicholson, Baton Rouge.
Pres. H. A. Hill, New Orleans.
MAINE—Pres. M. C. Fernald, Orono.
MARYLAND—Pres. H. E. Alvord, College Park.
MASSACHUSETTS—Pres. H. H. Goodell, Amherst.
Dean F. H. Storer, Jamaica Plain.
MICHIGAN—Pres. O. Clute, Agricultural College.
MINNESOTA—Pres. C. Northrop, St. Anthony Park.
MISSISSIPPI—Pres. S. D. Lee, Agricultural College.
Pres. J. H. Burrus, Rodney.
MISSOURI—Dean E. D. Porter, Columbia.
NEBRASKA—Dean C. L. Ingersoll, Lincoln.
NEVADA—Pres. S. A. Jones, Reno.
NEW HAMPSHIRE—Dean C. H. Pettee, Hanover.
NEW JERSEY—Pres. Austin Scott, New Brunswick.
NEW MEXICO—Pres. H. Hadley, Las Cruces.
NEW YORK—Dean I. P. Roberts, Ithaca.
NORTH CAROLINA—Pres. A. Q. Holliday, Raleigh.
NORTH DAKOTA—Pres. H. E. Stockbridge, Fargo.
OHIO—Pres. W. H. Scott, Columbus.
OKLAHOMA—Pres. R. J. Barker, Stillwater.
OREGON—Pres. J. B. Bloss, Corvallis.
PENNSYLVANIA—G. W. Atherton, State College.
RHODE ISLAND—Princ. J. H. Washburn, Kingston.
Pres. E. B. Andrews, Providence.
SOUTH CAROLINA—Pres. L. M. Dunton, Orangeburg.
SOUTH DAKOTA—Pres. L. McLouth, Brookings.
TENNESSEE—Pres. C. W. Dabney, Knoxville.
TEXAS—Pres. L. S. Ross, College Station.
UTAH—Pres. J. W. Sanborn, Logan.
VERMONT—Pres. M. H. Buchham, Burlington.
VIRGINIA—Pres. J. M. McBryde, Blacksburg.
Princ. S. C. Armstrong, Hampton.
WASHINGTON—Pres. George Lilley, Pullman.
WEST VIRGINIA—Pres. E. M. Turner, Morgantown.
WISCONSIN—Dean W. A. Henry, Madison.
WYOMING—Dean J. D. Conley, Laramie.
CANADA—Pres. J. Mills, Guelph, Ontario.

FROM THE TRADE.

MARK. W. JOHNSON SEED CO., Atlanta, Ga.: Illustrated and descriptive list of garden and field seeds and dairy machines.

W. J. BURTON & Co., Detroit, Mich.: Illustrated, descriptive catalogue of Eastlake metal slates for roofing and siding. Metallic hip shingles and the Detroit ventilator. Graphite coating for roofs.

J. T. LOVETT CO., Little Silver, Monmouth Co., N. J.: Descriptive and illustrated catalogue of pot-grown and layer strawberry plants, with instructions for their cultivation. Lovett's early strawberry and best blackberry are specialties.

JOHN ROYLE & SONS, Paterson, N. J.: Illustrated and descriptive catalogue of routing machines and cutters, cards, repeaters, cabinet saws and piano machines.

ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N. Y.: Catalogue with accurate descriptions and illustrations of Holland bulbs, fall plants, pot-grown and layer strawberries and hardy plants, including roses.

GEO. F. BEEDE, Fremont, N. H.: Report on well tested varieties of strawberries.

MILNER & SMITH, Sidney, New South Wales: Catalogue of vegetable and flower seeds; ornamental and flowering plants, fruit trees, small fruits, etc. This is a large handsome pamphlet of 150 pages, in which we were interested, to find a very complete list of all the most valuable American novelties in this line.

THE REASON

Hogs crave HAAS' REMEDY is because it invigorates their systems, expels worms, assists digestion, protects them from disease, and is the most successful remedy given to arrest the progress of disease.

If you would be convinced of its power, send for testimonials; or, still better, get enough for every hog in your herd, and after feeding it awhile you will wonder why you failed to get it before.

PRICES: 25 pound Cans, $12.50; Packages, $2.50, $1.25 and 50c. Largest are cheapest.

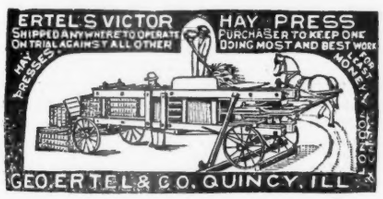
"HOGOLOGY."

A pamphlet mailed for 2-cent stamp. Orders have prompt attention.

JOS. HAAS, V. S.,
Indianapolis, Ind.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
Beware of Imitations.
NOTICE AUTOGRAPH OF Stewart Hartshorn ON LABEL AND GET THE GENUINE HARTSHORN

THE Minnesota Saving Fund & Investment Co. of Minneapolis, Minn., is a safe place to deposit or invest money in any amount. Write.


ERTEL'S VICTOR HAY PRESS
SHIPPED ANYWHERE TO OPERATE ON TRIAL AGAINST ALL OTHER
PURCHASER TO KEEP ONE ADDING MOST AND BEST WORK FOR LEAST MONEY
GEO. ERTEL & CO. QUINCY, ILL

FRUIT EVAPORATOR
THE ZIMMERMAN
The Standard Machine
Different sizes and prices. Illustrated Catalogue free.
THE BLYMYER IRON WORKS CO., Cincinnati, O.

"WORTH A GUINEA A BOX."
A box of
BEECHAM'S
PILLS
constitutes a family medicine chest.
Sick Headache, Weak Stomach, Loss of Appetite, Wind and Pain in the Stomach, Giddiness, Fullness, Swelling after meals, Dizziness, Drowsiness, Cold Chills, Flushings of Heat, Shortness of Breath, Costiveness, Blotches on the Skin, Disturbed Sleep, and all nervous and trembling sensations are relieved by using these Pills
Covered with a Tasteless and Soluble Coating
Of all druggists. Price 25 cents a box.
New York Depot, 365 Canal St.

Safe and Effective.

Brandreth's Pills are the safest and most effective remedy for Indigestion, Irregularity of the Bowels, Constipation, Biliousness, Headache, Dizziness, Malaria, or any disease arising from an impure state of the blood. They have been in use in this country for sixty years, and the thousands of unimpeachable testimonials from those who have used them, and their constautly increasing sale, is positive evidence that they perform all that is claimed for them.

Brandreth's Pills

Are purely vegetable, absolutely harmless, and safe to take at any time.

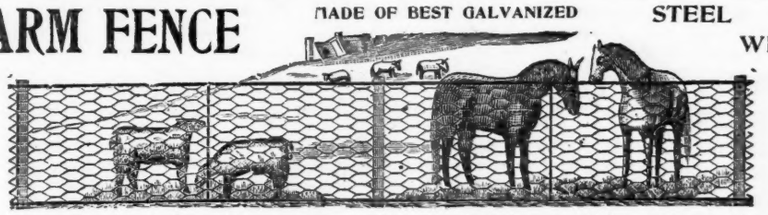
Sold in every drug and medicine store, either plain or sugar-coated.

H. W. JOHNS' IMPROVED ASBESTOS ROOFING
IMPROVEMENTS PATENTED 1890 IN THE U. S., CANADA AND EUROPE.
FIRE-PROOF. Easily applied by anyone. Send for Samples and Descriptive Price List.
H. W. JOHNS MANUFACTURING COMPANY,
H. W. Johns' Asbestos Fire and Water-Proof Sheathing, Building Felt, Steam Packings, Boiler Coverings, Liquid Paints, Roof Paints, Roof Cement, Fire-Proof Paints, etc.
87 MAIDEN LANE, NEW YORK,
JERSEY CITY, CHICAGO, PHILADELPHIA, BOSTON, ATLANTA, LONDON.

POWERS. CHIEF AND ROYAL
Of all Powers most suitable for a farm, THE

TREAD POWERS are the MOST CONVENIENT, Economical and Satisfactory. The users of our CHIEF *level tread* and ROYAL *even lag* insist that they are *better* than a geared Wind Mill, because you do not have to wait for the wind, which oftentime fails when most needed, and are also cheaper, and will pump water, run our Hero and American Grinding Mills, Hero Ensilage Cutters, Bee Line Corn Shellers, Common Sense Wood Saws, St. Johnsville Thresher, etc., to perfection. Better than an Engine because there is no waiting to get up steam, no fuel required, no engineer to run it, no danger of pipes freezing, etc. Better than a Sweep Power, because it can be put inside out of the weather. Horses do not have to mire in the mud, does not require a driver, and the same horses will develop more power than on Sweep Power. Don't fail to send for our new Round Barn Treatise on Ensilage and Silos, giving cuts and plans for round barn and round silo, together with full and important information mailed free with our handsome illustrated Catalogue, giving full description of our labor-saving machinery.
APPLETON MFG. CO.,
MINNEAPOLIS, MINN. APPLETON, WIS. CHICAGO, ILL.

FARM FENCE MADE OF BEST GALVANIZED STEEL WIRE.



Best Fence and Gates for all Purposes. Write for Catalogue giving full particulars.
THE SEDGWICK BROS. CO., Richmond, Ind.
Eastern Agent EDWARD SUTTON, 16 South 3d Street, Philadelphia, Pa.
Mention AMERICAN AGRICULTURIST when writing.

FARMERS

If you are in need of Roofing do not fail to examine the merits of the
H. W. Smith Patent Steel Folded Lock Seam.
The oldest in the World. Ask your dealer for it and if he does not handle it, address us for samples, prices, etc.
THE CANTON STEEL ROOFING CO., Canton, Ohio.

ANIMAL AILMENTS.

Sidebone — Ossification of the Lateral Cartilages.—John Gayton, Vermillion Co., Ill., has a valuable horse that is lame after fast work, or running in the pasture. On the outside of the right fore foot above the coffin joint is a bony formation, which has been coming a year. This disease consists in ossification of the elastic cartilages, or wings, of the bone of the foot—"the gristle turning to bone." Nature has preserved elasticity of the tissues near the heel by interposing cartilage instead of bone; but disease, or inflammation, has caused a bony deposit, by which means nature has attempted a remedy. Lameness is thus often removed, as, after the deposit of bone is completed, all fever subsides. The cause of sidebones is an inflammation set up in the cartilages by concussion from fast or heavy work on hard roads in young horses. It results sometimes from an accidental blow, or wound, or by treading upon the foot in backing and turning in the team, or when breaking into a run from a trot, and by being hauled, or sawed, by the bit, first one way and then the other, to bring the horse to a trot, or to check from running. It also results from wearing heavy shoes with high heel calks. The disease may be discovered in its early stage by closing the hand, with the thumb pressing on the inside of the leg, while the knuckles firmly press upon the outside just above the hair above the hoof. There will be tenderness and flinching, and a solid, bony swelling, though small, will be discovered. The only help is to hasten the bony deposit by applying a blister once a week for two or three times, giving absolute rest. When the deposit is completed, lameness ceases. In making the examination, the opposite foot should be held up by an assistant. This will bring out to the touch meanwhile the early or incipient formation of bone. In lameness, the head drops as the sound foot comes to the ground. An excellent alterative blister is made with biniodide of mercury, one ounce; lard, six ounces. All medicinal preparations should be procured of a druggist, as they will then be properly prepared.

Cough and Ulcerated Legs of Horse.—C. C. Shooter, Waldo, Fla., purchased a horse from Kansas that seemed perfectly well. After a time a cough set in, and with it some fever. After a while a large boil appeared on the neck, which separated, and when opened, discharged freely. At this juncture the cough became better, but when the boil got well the cough again set in. There seemed to have been an abcess in the throat, for a good deal of matter was coughed up. Four grains of arsenic were given daily with good results, but ulcers appeared on the fore legs. Give aloes ball twice a week. Bathe the ulcers with hot water, and touch the edges twice a week gently with nitrate of silver stick. Give every second night, in the feed, an ounce of powdered niter and a handful of whole flaxseed. Omit corn, and give ground oats and bran. A tablespoonful of powdered gentian will increase the appetite.

Erysipelas.—Joseph Collett, Marion Co., Kansas has a pedigree Shire horse that has been in the country five years. He is probably a stallion, though he is only styled a stable horse. His legs break out, they itch, he bites them, then water and bloody substance run from them. "Inform me what I can do for them." This is probably a case of erysipelas, from too much confinement and too high feeding. This is a specific febrile disease, causing inflammation of the skin and cellular tissues, resulting in swelling of the limbs, eruptions, or blisters, accompanied with heat, itching, burning sensation, and pain. Vesicles, or little blisters, form, and when rubbed or bitten by the suffering horse, a sticky serum, mixed with blood, oozes from them. This glues the hairs of the leg together, and, by friction, dust and dirt adheres to the affected limb or limbs, causing both an offensive appearance and smell. Eyrsipelas should be distinguished from malignant and infectious diseases as early as possible. It may be known from scarlatina by the absence of the disease previously and from the high fever attending it. In erysipelas there is general and firm swelling of the limb or limbs, while in scarlatina the inflammation and swelling is in patches. There is oozing of serum in both, but in erysipelas the limbs are tender and painful to the touch. In scarlatina there are glandular swellings, which are absent in erysipelas. In purpura the swellings are irregularly distributed, sharply defined, and not confined to a leg, generally a hind leg, as in erysipelas; but there are swellings about the head in purpura, as well as elsewhere, and these are not sensitive to handling, as in erysipelas. In lymphangitis—inflammation of the lymphatic glands—the swelling is generally confined to one or both hind legs, but originating in the flank, and there is no exudation of serum, but, rather, dry swelling. In erysipelas the affection is usually found about the fetlock and hock. The treatment must be commenced by a thorough but gentle cleansing of the limb with castile soap and water, as warm as can be well borne by the hand, and after cleansing keep up the fomentation by means of loosely applied bandages, kept wet with warm water, for an hour or two at a time, when an ointment, made with an ounce of extract of belladonna and an ounce of lard, well rubbed together, should be smeared over the leg when dry. This application should be made night and morning, after drying the surface of the leg. An aloes ball should be given every third or fourth night. Grass, roots, linseed and clean hay should be given instead of the heating foods. Plenty of salt and water should be given frequently. This disease usually runs a course of nearly two weeks.

Keep a Close Watch on the Sheep.—It is a proverb among shepherds, "Count your sheep every time you see them." This is the only safeguard against trouble, and when one is missing it should be hunted up without a minute's delay. When the weather is hot the sheep are subject to diarrhœa, which quickly becomes dysentery, and this is infectious and hardly curable. A sheep thus suffering is apt to be flyblown, and there is no more miserable sight than such a sheep. Any amount of trouble is repaid by an escape from such a calamity. Medicine alone will not stop an attack of diarrhœa; abstinence from food, until it can be digested by the restored stomach is as necessary as medicine, and no astringents should be used for this trouble. A mild laxative and mucilaginous food are the best remedies.

Non-Breeding Cow.—J. W. S., Orange Co., N. Y., has a valuable cow that failed to breed for more than a year, but she had bred every year heretofore. Either give her a rest or turn her into beef. She has evidently been pushed to her utmost. And, from her pedigree, doubtless her ancestors have been too much forced and too much inbred. The noblest cows of the world are those long and carefully bred for a special purpose, but that have not been banefully inbred, overfed, or pampered. Nature is a good teacher, and it shows good judgment to regard her teachings attentively.

Avoid Over-Feeding.—To crowd the stomach with food produces indigestion, and this causes diarrhœa. In hot weather this changes quickly to dysentery, and this is apt to be quickly fatal, so that an attack of diarrhœa should be stopped immediately. But to give astringents, as alum or bark, is the worst thing that can be done. The bowels must be emptied of their unhealthful contents of undigested food before there can be any relief. This is best done by a dose of oil, which soothes the inflamed intestines and relieves the suffering animal. After the bowels are emptied and relieved, some mucilaginous food, such as linseed gruel, is given, and, by gradually increasing the food as digestion returns, the cure is completed. Young calves and sheep are most subject to this disorder during the hot weather, and care should be taken that the calf's milk is not in any degree sour at any time.

Splint.—A. B. Cormack, Shandron, Cal., writes: "I have a four year-old old stallion that has a peculiar lameness in the nigh fore leg or shoulder. The only thing that can be seen is a bony growth extending from the lower part of the knee about two inches on the inside of the leg. The peculiar thing about it is, that when driven on the off side and as wheel horse, the lameness comes on sooner and is more marked than when driven on the near lead. When walked or driven slowly for a few miles it sometimes does not lame him. When the lameness is upon him he takes very short steps with that leg, and is inclined to strike the ground with the toe. He has a peculiar jerky motion to his gait. He takes a long step with the right foot and raises the left and seems to drop it perpendicularly. He is a large, powerful horse, 16½ hands, with excellent feet. As there is no veterinarian within 100 miles, and as I read your Animal Ailments with interest and profit, I appeal to you for council and advice." We have given the owner's account of this interesting case because it details a very important and frequently occurring difficulty in just such valuable horses. Splints that do not cause lameness need no treatment, but where lameness is the prominent symptom, rest, absolute rest, is demanded. And when this fails to give relief, and the region of the splint is tender and feverish, blisters will afford most relief. These may be made of cantharides in powder half an ounce to three ounces of lard; or, one ounce of biniodide of mercury to six ounces of lard, applied once in a week or two. These may be had of any druggist ready prepared for use. Nature, when properly aided by rest and judicious treatment, will cause the absorption of bony matter to a sufficient extent, at least, to prevent irritation and lameness. This verification is found in old horses having had bony growths on the legs, which have become free from tenderness of the parts affected, also free from lameness.

Diarrhœa in Calves.—The calf suffering from this painful disorder, which is the sure result of overfeeding, or of the use of sour milk when the young animal has not been used to it, is stopped at once by the suspension of feeding and giving not more than a pint of warm new milk, right from the cow. This should be the only food until the trouble is removed. It may be given every hour, and is both medicine and food.

Caked Udder.—George W. Chickering, Columbia Co., N. Y., has a cow that has caked udder. He has used cold water to no purpose. It is seldom that cold water for garget is of much use unless the inflammation is acute or very active in the great heat. But little difficulty would be experienced in such cases if prompt, immediate and persistent treatment were pursued. Smear the udder or part swollen hard with hot lard, rub gently and firmly towards the teats and strip out the milk clean three or four times a day. If the system is feverish, a pint of linseed oil will be of real service. But the gentle friction with the lard and hand will succeed, almost invariably, if persisted in, without any kind of medication. If the hardness is obstinate, a folded bag wrung out of hot water and enveloping the udder and held there by a blanket fastened over the back will modify the case in a gratifying manner. The continuance in well-doing produces the grand results.

Canker of the Ears of Dogs.—Many inquiries have recently come to the Animal Ailment Department of the AMERICAN AGRICULTURIST in reference to canker of the ear of dogs. Why do the simple remedies that are effective in some cases fail in others? All chronic diseases of animals, as in the human subject, are more difficult of care than the acute, though they are not so immediately fatal. But *canker oris* not only becomes chronic, but it is apt to become malignant. Where the disease extends to the salivary glands, and has made deep, long, and sinuous passages, it is of doubtful cure. It would have been better, long before this serious disease fastened upon the poor brute, to have consulted a skillful veterinary physician. Disease cannot be too soon eradicated from the system. The farmer and breeder should at once investigate the disease afflicting their animals. Common sense removes the veil of mystery, and applies the speedy remedy.

The Symptoms of Splint.—Splint is an exostosis or bony deposit of bone either between one or other of the small bones and the shank, or upon any of the three bones of the fore legs. The greater strain and concussion falls on the inside because it is under the center of gravity upon which the weight of the front of the body falls. Splints are sometimes divided into from one to five classes, according to the place of the bony deposit. This complication unnecessarily befogs cases. All the cases are caused by irritation and inflammation in the special location of the parts affected. This will depend upon the formation of the leg, the work, the weight, or on the age of the horse. In the case under consideration, the strain, when the horse was driven on the off wheel, caused more irritation than when freed from the strain of the pull and of the relative position on the other side. High bred road-

(*Continued on Page* 562.)

Mr. R. J. Brundage.

No Wonder

People Speak Well of HOOD'S. "For a long time I was troubled with weak stomach, Indigestion and Dyspepsia. I began taking Hood's Sarsaparilla and have not felt so well all over for years. My food seldom troubles me now. My sister also took Hood's Sarsaparilla with very pleasing results. I don't wonder people speak well of Hood's Sarsaparilla. Don't see how they can help it." R. J. BRUNDAGE, Norwalk, Ct.

N. B. Be sure to get Hood's Sarsaparilla.

HOOD'S PILLS act easily, yet promptly and efficiently on the liver and bowels.

FARMER'S BOYS—STOCKMEN—FARRIERS—JOCKEYS—You can become *skillful* HORSE and CATTLE DOCTORS, *complete* and *proficient* VETERINARIANS without losing time from your regular employment, by our system of home study. Our course will enable you to earn large fees as VETERINARY SURGEONS, or save large sums by treating your own horses or stock. HORSEMEN, this system will put Money in your Pockets. For further information and a *valuable book*, send 25 cts. [postage stamps] to The American Correspondence School of the Arts and Sciences, Chicago, Ill.

New York College of Veterinary Surgeons.

Lectures will begin October 1, 1892. For circulars address SECRETARY, 332 E. 27th St., New York City.

MY WIFE SAYS SHE CANNOT SEE HOW YOU DO IT FOR THE MONEY, $12 Buys a $65.00 Improved Oxford Singer Sewing Machine; perfect working reliable, finely finished, adapted to light and heavy work, with a complete set of the latest improved attachments free. Each machine guaranteed for 5 years. Buy direct from our factory, and save dealers and agents profit. Send for FREE CATALOGUE. OXFORD MFG. COMPANY, DEPT D. 7, CHICAGO, ILL.

AGENTS WANTED ON SALARY or COMMISSION, to handle the New Patent Chemical Ink Erasing Pencil. Agents making $50 per week. Monroe Eraser Mf'g Co. x 177 LaCrosse, Wis.

ESTABLISHED JAN. 1st, 1866. PATENT WATER PROOFED

CHEAP WATER PROOF; Applied by our new STRONG Patent method with ⅓ the labor of any other way. Unlike any other roof. No rust or rattle. An Economical and DURABLE SUBSTITUTE for PLASTER on walls. Ornamental CARPETS and RUGS of same material, cheaper and better than Oil Cloths. Catalogue and Samples Free.

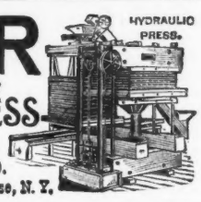
W. H. FAY & CO. CAMDEN, N. J.

WASHBURN

Guitars, Mandolins & Zithers in volume and quality of tone are the BEST IN THE WORLD. Warranted to wear in any climate. Sold by all leading dealers. Beautifully illustrated souvenir catalogue with portraits of famous artists will be Mailed FREE.

LYON & HEALY, CHICAGO.

CIDER MACHINERY, POWER SCREW HYDRAULIC, OR KNUCKLE JOINT PRESS.



Graters, Elevators, Etc.

Boomer & Boschert Press Co.

116 W. Water St., Syracuse, N. Y.

IT SAVES ⅓ THE FUEL! Send Postal for proofs, from many prominent men, look at results, then look at price. FIRST ORDER from each neighborhood filled at WHOLESALE rate, and secures agency. Write at once. ROCHESTER RADIATOR CO., Rochester, N. Y.

When writing to advertisers, be sure to mention the AMERICAN AGRICULTURIST.

IT WILL PAY ANY FARMER

to read what the COUNTRY GENTLEMAN, published at Albany, N. Y., the AMERICAN AGRICULTURIST, published at New York City, and FARM AND HOME, published at Springfield, Mass. have to say in commendation of our comparative tests of

Special Grass Mixtures

for HAY and for both TEMPORARY and PERMANENT PASTURES.

The Editors of these three most influential journals personally inspected the extended tests at our Experimental Farm, in Rockland Co., N. Y., and warmly praised the successful results already attained. What they saw is printed in full in our

PROGRESSIVE FARMERS' MANUAL, which we will mail free to all applicants.

PETER HENDERSON & CO.

35 & 37 Cortlandt St., New York.

BEST AMERICAN HORSE BOOK.

Special report on the disease of the horse, prepared under the direction of Dr. D. E. Salmon, chief of the Bureau of Animal Industry of the U. S., by Drs. Michener, Law, Harbaugh, Trumbower, Liautard, Holcombe, Huidekopen and Dickson. This book is now out of print and was published by the Department of Agriculture of the United States at an enormous expense. Every farmer should have one. Price $1.50. Postage 20c extra.

LEARY'S OLD BOOK STORE, First store below Market. 9 S 9 St., Philadelphia, Pa.

W. F. KENDRICK, Mining Investments.

Corresponding Secretary for the Extension Gold Mining & M. Co. of Breckenridge.

Official Broker for the Nelson Tunnel & Mining Co. of Creede.

The Kreutzer Sonata Consolidated Mining Co. of Creede.

Send ten cents in stamps for most complete mining map of Creede.

Rooms 505 Mining Exchange Building, Denver.

The Tendency

of the age is toward artistic effects. We are abreast of the times in our particular line—wall papers. 100 samples mailed for 8 cents. Prices 5 to 50c. a roll.

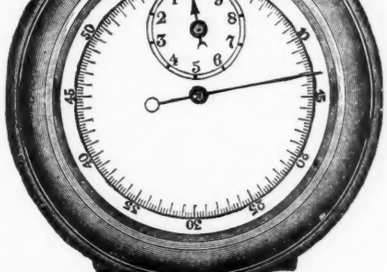
A. L. DIAMENT & CO., 1206 Market St., Phila.

HILL PAYS THE EXPRESS

$6.50

HORSE TIMER AND MINUTE REGISTER

NO MONEY REQUIRED UNTIL AFTER FULL EXAMINATION



Solid coin nickel, open face, stem wind timing watch, has start, stop and fly-back attachment, all working from the stem. Registers minutes, seconds and quarter seconds, and is the only standard practical horse timer made. Price in coin nickel case, $6.50; heavy 14K rolled gold plated case, $9.00; with quarter-second indicator and minute register combined, work from stem, $10.00.

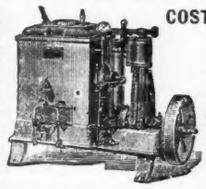
NOTICE.—That all may see and examine our timers before paying for same, we will send C. O. D. subject to full examination, all charges paid. Illustrated catalog of gold and silver horse timers and chronographs sent free. W. HILL & CO. Wholesale Jewelers, 207 State St. Chicago.

A Telegraph Operator's Work Is Pleasant!

Pays good wages and leads to the highest positions. We teach it quickly and start our graduates in railroad or commercial service. Railroads are very busy. Operators are in great demand. WRITE FOR CIRCULARS.

Valentine's School of Telegraphy, Janesville, Wis

The SHIPMAN AUTOMATIC STEAM ENGINE



COSTS little to buy, less to run, and nothing to keep. Requires no engineer. Burns kerosene, petroleum, etc.

WILL DO YOUR FARM WORK cheaper and better than horse or hand power. Saw wood, pump water, make cider, hoist hay, thresh grain, churn butter, etc.

SEND FOR CATALOGUE.

Shipman Engine Co., 246 Summer St., Boston.

THE PERKINS WIND MILL.

THREE STRONG POINTS.

NO OIL. NO CLIMBING TOWERS. MILL PERFECTLY SELF REGULATING IN ANY STORM.

The Perkins Wind Mill with Graphite bearings on all wearing parts, is the mill that possesses all these points, and is not affected by heat, cold or wet weather.

We have had twenty-three years experience in the manufacture of Wind Mills, Pumps, and Tanks, and are to-day one of the largest manufacturers of Wind Mills in the United States. The PERKINS is the first in the hearts of the Farmers. Remember there are none genuine except those made at Mishawaka, Ind. Farmers ask your dealers for a PERKINS. If he will not get it for you, write us for catalogue and prices.

Good Agents Wanted.

PERKINS WIND MILL CO. MISHAWAKA, IND.

POULTRY MARKER

By mail on receipt of 25c. Send for catalogue of Poultry specialties. Caponizing tools of every description, with instructions, cow milking tubes, teat dilators, windy dropsy trocars, poultry killing knives, roop syringes, anti-feather pullers, gapes exterminators, egg testers, how to make poultry pay, etc.

W. H. Wigmore, 107 S. 8th St., Phila., Pa.

BLIZZARD HORSE ICE CREEPER

FRAMES (3 sizes) fitted by ANY-ONE to any shoe. Calks only wear. Anyone can put in new. Set $3. ex. pd. For single sets send shoe size.

S. W. KENT, Sole Mfr., MERIDEN, CT.

ENGINES

If you want to buy a strictly first-class outfit at low figures, address The W. C. LEFFEL CO. Greenmount Av SPRINGFIELD, O.

CURRENT TOPICS.

Relative Value of Stock Foods.—The proteids in grain and vegetable products are very similar to those found in flesh, blood, and milk, being the immediate source of these growths in the animal body. Vegetable fats are a direct source of fat to the body, furnishing heat and muscular work. Starches, sugars and fibers produce heat, work, and animal fat. The ash of plants simply supplies the demands of the animal body for the mineral elements of the bones and tissues. Twenty-eight different feeds sold in New Jersey have been analyzed for these substances by E. B. Voorhees (B. 87). Buckwheat bran at $12, glucose meal $18, grano gluten $20, gluten meal $22.50, corn bran $18, dried brewers' grains $19.88, buckwheat middlings $19, oats feed $20, hominy meal $23, malt sprouts $17.67, rye bran $19.50, wheat bran $21, cotton-seed meal $28, and brown wheat-middlings $22.75, were found to be selling for less than their food value. Rye-feed $31, ship stuff, $27, yellow meal $27, linseed meal $31, ground corn and oats $27, wheat shorts $26, corn meal $26, white wheat-middlings $25, rye middlings $24, dark feeding flour $27, hominy feed $23.50, and ground oats $24.25, were selling for far more than their food values. Oat hulls, often used by millers to grind with corn, were found a poor food. These computed values have no reference either to digestibility, or to the manurial worth of the foods. The fact that the protein, fat, and carbohydrates cost less in one feed than in another, does not prove that it is a better food to buy for use, though the fact is a useful guide to feeding experiments.

Convention of Agricultural Colleges and Stations.—The sixth annual convention of delegates from each of the American agricultural colleges and experiment stations will meet in New Orleans on November 15th. The headquarters of the Association will be at the St. Charles Hotel. Any person engaged in agriculture, who attends these conventions, is generally admitted to the privileges of the floor, but only delegates can vote. Particulars and programmes may be obtained from Chairman Henry E. Alvord of the Executive Committee, College Park, Md. A brilliant review of the year's work in Scientific Agriculture is promised.

The Acids Formed in Silage.—Organic acids occur in small quantities in most animal foods, but in the natural state they are generally combined with other substances. The fermentation of silage changes some of the starches and sugars to acids in the free state. Lactic acid, so prominent in fermented milk, forms the bulk of the acids of silage. Acetic acid, or vinegar, is the principal acid which will escape from silage by evaporation. To find the effect of these acids upon digestion and flesh formation, H. J. Patterson, of the Maryland station (R. '91), fed four young Hereford steers, and analyzed their fæces and urine. The digestibility of the albuminoids or nitrogenous substances in corn fodder and corn silage was practically the same. The dry substance and the non-nitrogenous matter were slightly more digestible in corn silage than in corn fodder. The excess of fat or vegetable oil in cotton-seed meal did not increase the digestibility of silage, and did not diminish albuminoid consumption or increase flesh formation. The urine contained 57 per cent. of the nitrogen in the total excreta. In the silage ration, 27 per cent. of the nitrogen fed was stored in the body. In the fodder ration 34 per cent. of the nitrogen was stored in the body. The acids of corn silage increased the consumption, or waste, of the albuminoids stored in the body, thus preventing flesh formation.

Feeding Skim Milk and Corn-Meal to Pigs.—The feeding or pork-producing value of skim-milk is a matter of no small importance. It is estimated that 80 per cent. of the whole milk becomes skim milk. G. H. Whitcher and F. W. Morse, at the New Hampshire station (B. 11), fed six grade Chester white pigs with a ration of two parts skim milk and one part corn-meal for alternate periods from September 1st to January 15th. During the other periods an equal ration of wheat middlings and corn-meal was fed. The average weekly growth per 100 pounds of live weight was nearly nine pounds of pork when the wheat middlings and corn-meal were fed, but was nearly 12 pounds of pork when the ration was skim milk and corn-meal. Owing to its greater digestibility 100 pounds of nutriment in the skim milk ration equaled nearly 147 pounds in the middlings ration. With skim milk at 25 cents per 100 pounds, corn-meal at $1 per hundred, and middlings at $1.30 per hundred, the cost of 100 pounds of pork on the skim milk ration was $3.60, while it cost $5.20 on the middlings ration. For each 100 pounds of live weight, a pig should be fed, each day, about a gallon of skim-milk and three quarts of corn-meal in two or three feeds.

California Fruits.—Though usually regarded as a luxury, fruit is often a nourishing food. The nutritious portions, shown especially by the nitrogenous and saccharine contents, differ with the variety and conditions of growth. The fruits of California have been analyzed by G. E. Colby (B. 97) and H. P. Dyer (B. 93). Grapes and peaches contained the highest content, followed by prunes, apricots, oranges and lemons. Oranges and apricots contain the most flesh-forming albuminoids, followed by lemons and prunes. In Europe, the order of albuminoid content is: Oranges, prunes, peaches, bananas, grapes, apples and pears. The soil ingredients extracted by a fruit crop are a serious drain upon the soil. One thousand pounds of California fruits contained the following numbers of pounds of plant-food: Oranges, potash 2.11, phosphoric acid 0.53, nitrogen 1.83; apricots, p. 2.16, ph. 0.71, n. 2.29; lemons, p. 2.69, ph 0.61, n. 1.51; prunes, p. 2.65, ph. 0.53, n. 1.48. The percentage by weight of the pits or rinds is least in the prunes, followed by apricots, peaches, St. Michael's oranges, Navel oranges and lemons.

New York State Fair.—A more central location than Syracuse could not have been selected for the permanent grounds of the New York State Fair. Orlando B. Potter, the president of the State Agricultural Society, and his co-workers, have made every possible provision for the 52nd annual State fair at Syracuse from September 8th to 15th. The grounds and capacious live stock buildings are especially arranged for the convenience of exhibitors. Reasonable and ample hotel accommodations have been provided for intending visitors. One fare for the round trip has been secured from the railroads. The prospects are that the fair will be the largest and most successful in the history of the State.

Phosphate Beds in South Carolina.—Subscriber, Beaufort Co., S. C.: The phosphate rock in South Carolina has been estimated as high as 500,000,000 of tons, and as low as 5,000,000. In a recent map of the region, C. N. Shepard traced the deposit over 240,000 acres, and estimated the accessible rock as covering only about 10,000 acres. He gives an average of 800 tons per acre, which would make a total of 8,000,000 tons. This is generally regarded as an underestimate. A. R. Guèrard mentions many other undeveloped land and river deposits. One company alone, which has the exclusive right to a territory of about 6,000 acres in the Coosaw river, and the marshes, finds the river bottom everywhere covered with rock, which averages 13 inches in thickness, with a specific gravity of 2.5. Subtracting 25 per cent. for loss in washing and drying, the yield would be 1,700 tons, making at least 10,000,000 tons in the State.

Rape For Sheep.—James Haley, Hennepin Co., Minn.: Rape pasture is excellent for fattening sheep. Plant the seed at the rate of one pound per acre, in rows far enough apart for horse cultivation. The rape will overshadow the weeds, and it is not necessary to thin the plants. Be careful when turning sheep or cattle into the rape field that they do not get a full feed at first, or it will scour and cause serious bloating, especially in breeding animals. Fully matured rape may be fed with impunity. Give plenty of salt. Rape leaves resemble turnip and cabbage leaves, but there is no head nor enlarged roots. The plant makes a good fall crop in cold climates.

Butter-Fat in Cheese.—Wisconsin and Ohio, are trying some new laws about cheese making, with a view to compelling the cheese-makers to produce a richer and better article. If the statistics given out are correct, the Wisconsin law is working very well. These laws prescribe the amount of fat that each cheese must contain except an evident slip in the Ohio law, which awards the highest favor to the cheese made from whole milk, without the slightest regard to the amount of butter fat that whole milk may, or may not, contain. These laws are purely tentative, and deal with the new subject of compelling men by law to make good cheese. The difficulty of the situation will be seen in the fact that, while the law tests the work done, simply by the amount of butter fat in the cheese, a maker may load the cheese with fat, and still make a cheese of low quality. Cheese is not made of butter-fat, but of casein.

Apple Crop in Europe.—Exportations to Europe of the American apple crop of 1892 have begun. The latest reports we have received from Otto G. Mager & Co., state that the English apple crop promises to be light and of inferior quality. France has a small crop, but never competes with America. The Holland crop is light and inferior; Belgium has a fairly good crop. Germany has a poor crop, not enough for home consumption and will probably buy in the Liverpool market. Denmark is the only European country which will compete with American apples. This year it has a fair crop of good quality Gravensteins which will reduce the fancy prices for early shipments, but the prospect for later shipments is good. Pears, plums and all small fruits are a short crop in Europe.

The Percheron Horse.

The Boulonnais *versus* Percheron.—Joseph Taylor, Compton, Canada, desires to know the difference between the Percheron and the Boulonnais horses. Whoever has made a thorough personal investigation of the horses of Northern France, must come to the same conclusion we did:—That the largest, coarsest, heaviest and slowest, peculiarly dappled grey horses of France, are of the Boulonnais breed. These come from the old Flemish stock. The dappled grey color is peculiar to the Boulonnais. This color never came from the Arab, as this peculiar dapple is never found in that breed. The Percherons have been crossed with the Boulonnais, for the demand for heavier horses compelled the breeders to use the cross to supply the demand for heavier horses. The Frenchman that imported the four stallions is undoubtedly honest in his assertion that the three dappled grey and one bay, are all Boulonnais. Percherons are the more fashionable and bring fully a third more in price. If these stallions are large—16½ to 17 hands—with coarse heads, legs, feet and heavy tails and manes, they are Boulonnais horses. Some of the finest Percheron horses of France, are used, three abreast, on the heavy omnibusses of Paris. They are of various colors—bay, brown, black and iron grey. Where the dapple grey is seen, there is an infusion of Boulonnais blood. At the French government stud at Du Pin in Perch, the colors were as above stated, though there were, perhaps, two or three faintly dappled grey among the fifty or more stallions. They were fine horses. None but the very best horses are purchased for the stud by the agents of the government. Among the Arab stallions in the same stud, bay, light chestnut or sorrel prevailed, though there were one brown and two grey horses; but none of that mottled, stained, spotted or maculated appearance on a grey ground, as is so characteristic of the Boulonnais breed of horses.

Percheron Horses.—The trotting cross-bred Percheron horses are bay, brown, sorrel or chestnut and iron grey. It is seldom that the characteristic Boulonnais dapple appears in the French trotter. The fashion among the French breeders of fattening their horses "hog-fat," is because there is a demand for weight by the purchasers. The private Percheron horses in France, as well as the stage-horses, do not show the heavy carriage of flesh seen in our brewery horses. And it is here that the peculiar *spot* of the Boulannais is also seen to prevail. As show is sought for, size, spots, and heavy harness go together. The Boulonnais are probably, the largest, coarsest, slowest and heaviest horses of Europe, with the exception of the English Shire or Cart horses. Many of these large horses have one of the most valuable characteristics, the fast walk. There is no gait so valuable for farm or draft purposes as a fast walk. At this pace there is less expenditure of vital force than at any other. However breeders may inveigh against this or that breed of heavy horses, all of them run back to the old Flemish black horse for size and strength.

AFTER HARVEST

When the golden grain has been shocked and put away, and you see the good results of a hard but prosperous season's work, your thoughts are most likely turned towards the purchase of a new Buggy and Harness, and you say to yourself, what make shall I buy? The answer comes to you quickly—THE CELEBRATED

MURRAY $55.95 BUGGY and $5.95 HARNESS *of course. They are*

Better than Gold.

Their reputation for style, strength and durability being world-wide, are known the world over and are justly recognized as the BEST and CHEAPEST Vehicles and Harness on the market. They are sold direct to the consumer at prices beyond competition. No middleman nor agent gets in between them and the consumer to increase the price of their goods.

Do you wish to purchase a Buggy or Harness this year? If so, and you want value received for your money and something BETTER THAN GOLD, there is but one make to buy, and that is the celebrated "MURRAY."

MURRAY

Many Firms Make Big Claims

But We Prove our Words by Deeds

AND WILL WAGER

ONE THOUSAND DOLLARS with any Carriage or Harness firm in the U. S., same to be given to any charitable institution by the loser, that we can show more honest and better testimonials for the "MURRAY" Buggies and Harness for the time our goods have been on the market, than any one factory in the world.

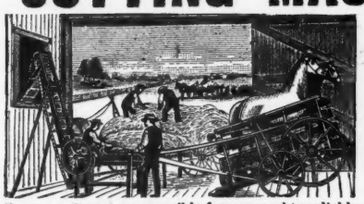
Write for our large, illustrated Catalogue, containing full description and prices of our "MURRAY" VEHICLES and HARNESS. We will mail it to you FREE. Mention this paper when you write. Address all letters to

THE WILBER H. MURRAY MANUF'G CO., MURRAY BUILDING **CINCINNATI, OHIO.**

"SMALLEY" ENSILAGE AND FODDER CUTTING MACHINERY.

The Largest Line of Cutters, Carriers and Powers in the world at prices so reasonable that all can afford to buy.

Write for a "Smalley" Catalogue and see.



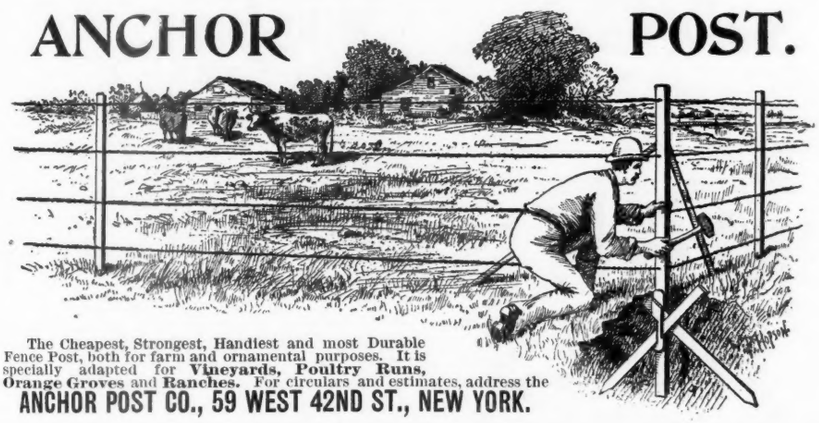
—Also **Drag & Circular Saw Machines, Farm Feed Mills,** and a first-class **Root Cutter and Vegetable Slicer**

When you are getting get a **"SMALLEY."**

Special introduction prices in all new territory to responsible farmers and to reliable agents. Prof. COOK'S "Silo and Silage" tells how to build silos, our methods of filling and feeding. Best treatise ever published. Sent free *if you name this paper.*

SMALLEY MFG. CO. Manitowoc Wisconsin.

ANCHOR POST.



The Cheapest, Strongest, Handiest and most Durable Fence Post, both for farm and ornamental purposes. It is specially adapted for **Vineyards, Poultry Runs, Orange Groves** and **Ranches.** For circulars and estimates, address the

ANCHOR POST CO., 59 WEST 42ND ST., NEW YORK.

CHICAGO VETERINARY COLLEGE.

FOUNDED 1883.

The most successful college on this continent. For further particulars address the Secretary,
JOS. HUGHES, M. R. C. V. S., 2537-2539 State St., Chicago, Ill.

University of the State of New York.

AMERICAN VETERINARY COLLEGE

139 and 141 West 54th St., New York.

18th Annual Session.

The regular course of Lectures commences in October each year. Circular and further information on application to **A. LIAUTARD, M. D. V. M.,** Dean of the Faculty.

Please mention AMERICAN AGRICULTURIST.

FOR BEST HAY PRESSES

STEEL PRESSES.

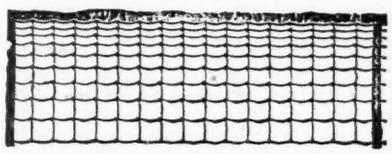
SELF FEEDER

ADDRESS P. K. DEDERICK & CO.
DEDERICK'S WORKS, ALBANY, N.Y.

$20 Phosphate for Wheat.

Sold to farmers direct. No agents.
YORK CHEMICAL WORKS, YORK PA.

PAGE WOVEN WIRE FENCE.



IS A MISS AS GOOD AS A MILE?

THAT DEPENDS. Some Misses are *VERY DEAR*, and a mile of some kinds of fence would bankrupt the owner. Thousands of miles of Coiled Spring Fence have banished care from the happy owners. Don't miss trying a mile.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

$100 in Prizes

— BY THE —

MIRROR AND FARMER

For Essays on Indian Corn. $50 to First; $25 to Second; $15 to Third; $10 to Fourth.

The essays must consist of not less than 1000 words nor more than 1500, and must all be forwarded to the MIRROR AND FARMER, Manchester, N. H., by September 10. They will be published November 3d in an edition of

75,000 COPIES.

A Great Opportunity for Advertisers.

The average weekly circulation of the MIRROR AND FARMER in 1891 was over 35,000 copies. It is the leading family, farming and horse paper in New England. A 64-column paper. Price, $1.00 a year, in advance; Soldiers, 75 cents. Send for sample copy. Advertising rates forwarded upon application.

SHEEP WANTED.

50 or 100 hardy sheep suitable for placing on rocky and partly wooded hills. Address, with full particulars,
THEO. H. MEAD, 504 Grand Street, New York.

PENNINGTON (N. J.) SEMINARY for both sexes. 53d Year. Offers rare educational facilities. Terms moderate. High and healthful. Steam heating; gas; fire escapes. On thoroughfare between New York, Trenton, Philadelphia, Baltimore and Washington. Catalogue, complete and beautiful, sent free.
THOS. HANLON, D. D., President for 23 years.

Canada Unleached Hard Wood ASHES!

BEST GRADES! LOWEST PRICES!

We fully guarantee the **strength** and **purity** of our Ashes. Price, sample, pamphlet and other information sent on application.

MUNROE, DeFOREST & CO.,
Successors to Munroe, Judson & Stroup,
32 Arcade Block, Oswego, N. Y.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

ANIMAL AILMENTS.

(*Continued from Page* 558.)

sters and heavy young horses, driven at a fast gait, are most liable to splints, especially when worked hard when too young to resist the effect of the severe concussion. In these cases, the bony deposit is in the weakest part of the leg, or half way between the knee and fetlock. Splint is common in bone spavin, because the exostosis result from a common cause. Pain on pressure over the bony deposit and lameness are the early symptoms. Of course the lameness would vary with the location and the extent of the inflammation, also in the kind of work performed, as well as the condition of the roads as to solidity and smoothness. In the examination for a suspected splint, the opposite leg should be held up to give more prominence to the deposit. In the above case, if there was no splint and no tenderness, and the lame horse grew less and less with exercise, the case would look more like navicular disease. But here the feet are "splendid, black, and hard as iron." Pressure with the knuckles will show the pain and tenderness.

Panting and Puffing Mare.—John Bornholt, Ottawa Co., Ohio, has a valuable mare nine years old, that pants and puffs every time she is driven. It was first noticed in the spring. The mare does not sweat. Give half an ounce of nitrate of potassa-niter in the feed three times a day, with a tablespoonful of powdered gentian. Give, three times a week, a handful of whole flaxseed in the feed at night. Wet the hay and feed slightly before feeding. Ground feed is best, with one-fourth wheat bran.

Cow Poisoned in the Pasture.—A subscriber in Central New York, has a cow that has several times come home from the pasture with head so swollen that her eyes were almost shut, with matter running out of them. The throat was swollen, and also the vulva. These conditions subsided by keeping the cow from the pasture a day at a time. Probably some poisonous herb is the cause. Remove the cow to another pasture. Treatment is unnecessary.

Acne—Warbles in Horse.—Joseph D. Stover, Jackson Co., Mich., writes that he has a fine young driving horse that has small swellings wherever the harness presses or chafes the skin. The horse has been fed too stimulating food. Give an aloes ball from the druggist's, once in ten days, feed oats, from bran and a tablespoonful of whole flaxseed, with some grass or carrots. Mangels are especially useful for horses kept up on dry food. The evening meal may consist entirely of cut mangels. Of course a tumor or boil under the harness should be protected by two pads. Woolen cloth used as pads chafes too much.

Constipation in Animals.—L. Pryor, Fairfield Co., Conn.: Animals, unlike mankind, do not suffer from constipation from neglect to attend to the natural inclination, or of physical demands. But in domestication many obstacles are thrown in the way of nature, so that constipation results. When constipation does occur, the simplest methods of relief are the safest and best. Change of diet, mild laxatives, or simple warm water enemas are best and most efficient. In full grown animals a pound of Glauber's salts in a quart of warm water, or a pint of linseed oil given at a dose, will, ordinarily, with proper diet, succeed, without in the least degree causing even temporary debility or loss of natural function.

Nursing Sick Animals.—L. Ryder Atlantic Co., N. J.: Good nursing comprises everything that in any way adds to the comfort and health of sick animals, and to the restoration to health in any degree, and especially of the prevention of disease. Pure air, dry and well-lighted stables, clean bedding, daily grooming, pure water and regular meals are a part of good nursing. The sick are separated from the well animals. Every duty requires tact and time. Tact saves time. Tact or talent performs good service. Patience and humane feeling are indispensable in good nursing.

Spasmodic Colic.—The signs of spasmodic colic are: Sudden pain in the region of the small intestines, indicated by the repeated turning of the head to the flank, kicking the belly like the ox, restlessness, pawing, lying down, rolling and kicking, with sudden intermissions from all pain. Should the intervals of rest become prolonged, the case is more hopeful. A safe and prompt remedy is linseed oil one and one-half pints, laudanum two drams. Repeat half this dose every half-hour till relief is secured. Green food in summer, given to stabled horses, new hay, large feed of corn meal, intensely cold water when the animal is heated, or any indigestible food, or severe driving may bring on an attack of colic.

For Bronchitis

"I never realized the good of a medicine so much as I have in the last few months, during which time I have suffered intensely from pneumonia, followed by bronchitis. After trying various remedies without benefit, I began the use of Ayer's Cherry Pectoral, and the effect has been marvelous, a single dose relieving me of choking, and securing a good night's rest."—T. A. Higginbotham, Gen. Store, Long Mountain, Va.

La Grippe

"Last Spring I was taken down with la grippe. At times I was completely prostrated, and so difficult was my breathing that my breath seemed as if confined in an iron cage. I procured a bottle of Ayer's Cherry Pectoral, and no sooner had I began taking it than relief followed. I could not believe that the effect would be so rapid."—W. H. Williams, Cook City, S. Dak.

Lung Trouble

"For more than twenty-five years, I was a sufferer from lung trouble, attended with coughing so severe at times as to cause hemorrhage, the paroxysms frequently lasting three or four hours. I was induced to try Ayer's Cherry Pectoral, and after taking four bottles, was thoroughly cured. I can confidently recommend this medicine."—Franz Hofmann, Clay Centre, Kans.

AYER'S Cherry Pectoral

Prepared by Dr. J. C. Ayer & Co., Lowell, Mass.
Sold by all Druggists. Price $1; six bottles, $5.
Prompt to act, sure to cure

Nothing On Earth Will MAKE HENS LAY.
LIKE
Sheridan's Condition Powder!

It is absolutely pure. Highly concentrated. In quantity it costs less than a tenth of a cent a day. Strictly a medicine. Prevents and cures all diseases. Good for young chicks. Worth more than Gold when hens moult. *If you can't get it send to us.* Sample 25 cents, five $1.00. *Sample Copy* **Best Poultry Paper** *sent free.* I. S. JOHNSON & CO., 22 Custom House St., Boston, Mass.

EVERY MOTHER
Should Have It in The House.
Dropped on Sugar, Children Love
Johnson's Anodyne Liniment
And take it for Croup, Colds, Sore Throat, Cramps, Pains.
Stops Inflammation, in body or limb, like magic. Cures Coughs, Asthma, Catarrh, Colic, Cholera Morbus, Rheumatic Pains, Neuralgia, Lame Back, Stiff Joints, Strains, Illustrated Book free. Price, 35 cents; Six $2.00. Sold by druggists. I. S. JOHNSON & CO., Boston, Mass.

PRIME—
Cotton Seed Meal
Is the **Best** and **most profitable FOOD** for **Cattle** and **Sheep.** Reports from the principal Agricultural Experiment Stations show the great value of Cotton Seed Meal for feeding. The farmer gets back the cost of the meal in the increased value of manure for fertilizing purposes.
It is of special value in feeding milch cows.
It makes { MORE MILK, RICHER CREAM, FIRMER BUTTER.
For sale by all dealers in feed. Pamphlets showing how to feed, the advantages to be gained, &c., mailed free on application to
THE AMERICAN COTTON OIL CO.
29 Broadway, New York.

$50 Down Buys a Farm—In Crop!
If you want an 80-acre farm in a good neighborhood; near railroads; good buildings and fences and **now in crop,** send to-day for my lists. 80, 160, 320-acres at prices from **$2.50 to $20.00 per acre!**
As my terms are ten years time and only
One-Tenth in Cash
any live farmer can make his crops "pay him out." This is better than raw land at any price. Pays an income from the beginning.
OTIS A. TURNER,
Room 7, New England Bldg, Kansas City, Mo.

OUR LATEST THE GEM STEEL WIND ENGINE AND GEM STEEL TOWER
When furnished with **Graphite Bearings,** the **GEM WIND ENGINE** requires no oiling, no climbing of towers, no hinged or frail-jointed towers and practically no attention, yet is guaranteed more durable than other mills that are oiled. Truly a **GEM** and worth its weight in Gold. The **GEM STEEL TOWER** is made triangular in shape, the corners and girts being of angle steel; the braces are steel rods, each of which can be firmly drawn up, independent of the other. It combines beauty, strength, durability and simplicity to the greatest degree, and is much more easily erected than a tower made of wood.
No other company offers equal inducements when prices, terms, quality and assortment of goods are considered. Send for catalogue.
U. S. WIND ENGINE & PUMP CO.,
BATAVIA, ILL., U. S. A.

HALLADAY STANDARD PUMPS TANKS, HORSE HAY TOOLS AND THE MOST COMPLETE LINE OF WIND MILL SPECIALTIES. THE STANDARD, VANELESS & U.S. SOLID WHEEL WIND MILLS. WE ALSO MANUFACTURE THE CELEBRATED
BRANCH OFFICES: Omaha, Neb.; Kansas City, Mo. | DEPOTS: Boston, Mass.; Ft. Worth, Tex.

—THE— OHIO ENSILAGE AND FODDER CUTTERS AND CARRIERS
Are the Best.
Large and Complete line of Machines adapted to all uses. 1892 Catalogue embraces Treatise on Ensilage and Plans for Silo.

CATALOGUE sent FREE on application.
THE SILVER MFG. CO., SALEM, OHIO.

DOUBLE Breech-Loader $7.99. RIFLES $2.00 WATCHES
GUNS
BICYCLES $15 All kinds cheaper than elsewhere. Before you buy, send stamp for catalogue to THE POWELL & CLEMENT CO. 166 Main St., Cincinnati, O.

MATTERS OF BUSINESS.

$100 in Prizes for Essays on Corn.—The *Mirror and Farmer*, as will be seen elsewhere, offers $100 for four essays on Indian corn, $50 being the first prize. Anybody can compete.

A Salary—With expenses paid, will come handy to any one who is now out of employment, especially where no previous experience is required to get the position. If you want a position, see advertisement on Page 565, headed, "A Chance to Make Money."

Musical Instruments.—Lyon & Healy, the music firm of Chicago, publish and mail free upon application, 54 different catalogues which describe and illustrate everything from a fife to a church organ. And it pays them, too, for great is the power of printers' ink.

Round Barns for Silage.—A pamphlet containing directions for silage and the silo is issued by the Appleton Manufacturing Co., Chicago, Illinois, with specifications for building a round barn, which will be of much interest to our readers. See their advertisement.

Scarlet Clover.—T. W. Wood & Sons, Richmond, Va., are pioneers in the sale of the seed of crimson or scarlet clover, and have done a most valuable work for our farmers in disseminating information regarding its uses and culture. Send for circular, giving full information regarding above, and all seeds for fall sowing.

The Buggy and Harness Prizes.—The buggy given to an AMERICAN AGRICULTURIST subscriber by the Wilbur H. Murray Mfg. Co. of Cincinnati, for the best reason why their buggies and harnesses are "better than gold," was awarded to Mrs. Jennie M. Wilson of Mears, Mich. The harness was awarded to Oliver Wood, Wilmore, Ky.

An Excellent Portrait.—Henry Irving is fond of relating a little incident that occurred to him when in a Dorsetshire village last summer. While passing a group of children one of them eyed him so sharply that the actor said, "Well, little girl, do you know me?" "Yes, sir," was the reply, "you are one of 'Beecham's Pills.'" She had seen his face in one of their advertisements.

Seed Cleaning Machines.—An international exhibition of seed cleaning machines will be held in St. Petersburg, Russia, in 1893, for the purpose of acquainting farmers and implement makers with the best and newest machinery for cleaning, screening, dressing and drying grain and other seeds. Intending exhibitors should address, Imperial Free Economical Society, St. Petersburg, 4 Rota, Ismailovsky Polk, No 2.

Remarkable Increase in the sale of Fertilizers.—In an advertisement on another page of this number, The Bradley Fertilizer Co., Boston, Mass. and Rochester, N. Y., presents in an interesting and instructive manner the yearly sales of their fertilizers, by decades. Beginning in 1861 with selling 500 tons, the amount sold last year appears almost incredible. A glance at the diagrams referred to will give a clear idea of the enormous extent of the business of this firm.

Uses for Graphite.—A correspondent writes: "I have used handhole and manhole gaskets eight to ten times by carefully smearing with graphite the surface next boiler shell, taken out at periods of three to four weeks, using steam pressure as high as 100 pounds. In packing water glasses, by putting a little graphite and oil on the gasket they would vulcanize as soft as lamp wick and retain their elasticity until the glass was changed, when the old rubber could be removed without trouble, while by the old way, I have spent much time in digging out the rubber, baked hard as vulcanite. Another thing I used it for was after putting back my handhole plate or plugs in back connection, I carefully brush away all the soot and ashes, then with a small brush paint a good coat of graphite over flange, stud and nuts. After

(*Continued on Page 565.*)

DON'T YELL WITH PAIN.

THE OWEN ELECTRIC BELT

WILL RELIEVE AND CURE YOU.

ILLUSTRATED CATALOGUES

in English, German, Swedish or Norwegian will be mailed to any address for 6 cents postage

The Owen Electric Belt and Appliance Co.

201 TO 211 STATE ST., CHICAGO, ILL.

NEW YORK OFFICE, 826 BROADWAY.

Mention AMERICAN AGRICULTURIST when writing.

$3 Voltaic Electric Belt cures the *weak, nervous, pains, kidney* diseases. Dr. G. W. Dively, Cincinnati, O.

"A" Grade $35.

ALLIANCE. GRANGE. LEAGUE.

"A" Grade $46.

Have You Seen Our New Catalogue for 1892?

It contains more valuable information to the page than any catalogue you ever saw. We can't begin to tell you about it in this small space. Send your name and P. O. address and get one free. You will be surprised and pleased at what you get. *We're Headquarters for everything on Wheels:*

BUGGIES, WAGONS, SURRIES, ROAD CARTS HARNESS, SADDLES.

SALESROOMS AND FACTORY: Sycamore and Canal Sts.,

"A" Grade $40.

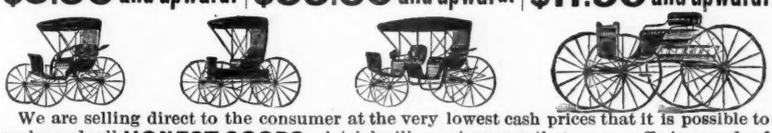
UNION. PATRONS. F. M. B. A.

"A" Grade $72.50

ALLIANCE CARRIAGE CO., CINCINNATI, OHIO.

Honest Goods at Honest Prices!

HARNESS $5.50 and upward. | BUGGIES $55.00 and upward. | Road Carts $11.50 and upward.



We are selling direct to the consumer at the very lowest cash prices that it is possible to make and sell HONEST GOODS. A trial will convince you that we are offering goods of a QUALITY, DURABILITY and ELEGANCE NEVER BEFORE PRODUCED. Write for free Illustrated Catalogue, containing all information, and prices that will please.

KEMPER MANUFACTURING CO., CINCINNATI, OHIO.

Burlington Route

BEST LINE

CHICAGO AND ST. LOUIS

TO

Kansas City & Omaha

Asthma The African Kola Plant, discovered in Congo, West Africa, is Nature's Own Cure for Asthma. Cure Guaranteed or No Pay. Export Office, 1164 Broadway, New York. For Large Trial Case, FREE by Mail, address, KOLA IMPORTING CO., 132 Vine St., Cincinnati, O.

A HOME IS WAITING FOR YOU IN the Great Wheat State of Minnesota, that never yet had a crop failure. Plenty of wood, water and work. The farms there are attracting the attention of the Old and New Worlds. Write the

INTERNATIONAL LAND COMPANY,

Guaranty Loan Building, Minneapolis. Their farms are sold on easy and moderate terms of payment. If needed, they will assist you.

GRAPE VINES

Plants of Best Quality. Warranted true to name. Lowest Prices. Largest Stock and Assortment of Old and New Varieties. Send for Price List.

BUSH & SON & MEISSNER, Bushberg, Mo.

I have the finest stock of Plants in the N. E. States. 30 varieties. Headquarters of the Leader Strawberry. Send for my prices before ordering elsewhere.

C. S. PRATT, Reading, Mass.

SHEEP Cotswolds, Southdowns, Oxford Downs and Shropshire Sheep and Lambs of superior breeding. We are booking orders now for lambs of the above breeds. We also have a choice lot of yearlings and two-year-olds to offer. Write at once for prices and particulars.

W. ATLEE BURPEE & CO., 475 N. 5th St., Philadelphia, Pa.

A WORLD'S FAIR GUIDE FREE.

Contains map of Chicago and Exposition grounds and picture and description of all the Fair Buildings. We send it free if you mention THE AMERICAN AGRICULTURIST and ask for free plat of our $150 lots, on $4 monthly payments, at GRIFFITH, Chicago's coming factory suburb, if you also promise to show the plat to five other persons. Will you do it? Write to-day. JAY DWIGGINS & CO., 490 Chamber of Commerce, Chicago, Ill.

BULBS For FALL Planting. ROSES PEONIES

Catalogue FREE | Ellwanger & Barry Mt. Hope Nurseries, ROCHESTER, N. Y.

PEACH TREES WHOLESALE AND RETAIL. Circulars and price list free. Address D. S. MYER & SON, Bridgeville, Del.

CHOICE FRUIT TREES—All the old standard sorts and all new introductions of value. CHOICE FLOWERING SHRUBS and SHADE TREES. It will pay you to examine our Price List. Sent free.

EDWIN ALLEN & SON, New Brunswick, N. J.

The Poultry World. The best poultry paper. $1.25 per year. Send one dime or five 2c stamps for sample copy. Address H. H. Stoddard, Publisher, Hartford, Ct.

PEACHES NICE TREES. Leading kinds (my own growing). General Nursery Stock. Send list of wants in Nursery line for an estimate. JOSIAH A. ROBERTS, Malvern, Pa.

FARMERS' WIVES. How to make money on top of your cook stove. Write AMERICAN MFG. CO., Waynesboro, Pa.

Corn Harvesting Revolutionized.

One man can cut and shock 3 to 5 acres in a day. Add. with stamp. I. Z. MERRIAM, Whitewater, Wis.

1000 SHADE TREES WANTED.

Proposals for furnishing 1000 Shade Trees, to be delivered in ample season for fall planting, will be received by the Board of Trade of the Oranges. The trees should include Tulip, Gum, (Swamp Maple), Rock and Silver Maple, Linden, and other well tested, reliable, quick growing varieties. Bidders will state average age and dimension of trees, and give price on board cars or at Orange, N. J. Address

FRANK W. BALDWIN, Secretary Board of Trade, Orange, N. J.

$10 will buy a Hutchinson's Cider and Wine Mill. Circulars on application. John W. Douglass, 57 Beekman street, New York City.

BEATTY'S PIANOS, ORGANS, $23 up Agt's wanted. Cat'lg Free. Add Dan'l F. Beatty, Washington, N. J.

Irrigation by Artesian Wells.

Many of the arid regions in the western part of the United States are too far from the snow-fed mountain streams to receive irrigation water from that source. The attempt has been made to supply some of these vast areas with water from artesian or flowing wells. Many natural artesian basins have been found where the ground water was under sufficient pressure to flow to the surface from an average depth of 210 feet The walls are drilled from three feet to 1,523 feet in depth, and are cased with iron tubing, to the bottom of crumbling strata.

There are, at present about 4,000 of these flowing wells, which are used to irrigate nearly 52,000 acres. The average cost of each well has been $245, and each irrigates about 13 acres, at an average cost per acre of $18.55, or more than double the cost when the water is supplied from streams. But the owner of a good well is independent, and, having exclusive control of the water, can use it at his convenience.

The most famous artesian basin is that of the James River Valley, in North and South Dakota, the wells being very numerous, and of large flow. The pressure in an artesian basin is often barely sufficient for a limited number of wells, and any increase beyond this number decreases the supply received from each well. Half of the artesian wells now flowing in the West are used exclusively for house and stock. The other half furnish a useful auxiliary to the regular irrigation canals. The subject is fully treated in Census Bulletin 193, which those interested may obtain on application to the Census Bureau, Washington, D. C.

Well Paid for the Money.—I have long been a subscriber to the AMERICAN AGRICULTURIST, and have always been well paid for my money, and, although I am too old to be able to read now, I have the paper read to me.

P. H. HOPKINS, Clinton Co., Ky.

Many Good Points.—The AMERICAN AGRICULTURIST gives me so many good points on stock raising, fruit culture, and gardening in general, that I cannot do without it.

A. J. REED, San Louis Obispo Co., Cal.

TIRED OUT HOUSECLEANERS

Playing at house cleaning is tiresome, but real house cleaning is more so.

Gold Dust Washing Powder

does the work so well, and makes it so much easier, that half the terrors of house cleaning are removed by its use. 4 lb. package 25 cents. At your grocers. Try it.

N. K. FAIRBANK & CO., Sole Manufacturers,

CHICAGO, ST. LOUIS, NEW YORK, PHILADELPHIA, BOSTON, BALTIMORE, NEW ORLEANS, SAN FRANCISCO, PORTLAND, ME., PORTLAND, ORE., PITTSBURGH AND MILWAUKEE.

We will furnish the most economical roofing and siding, all styles. Also Metallic Shingles from Iron or Steel with full directions and low prices.

GARRY IRON ROOFING CO., Cleveland, O.
Mention Agriculturist.

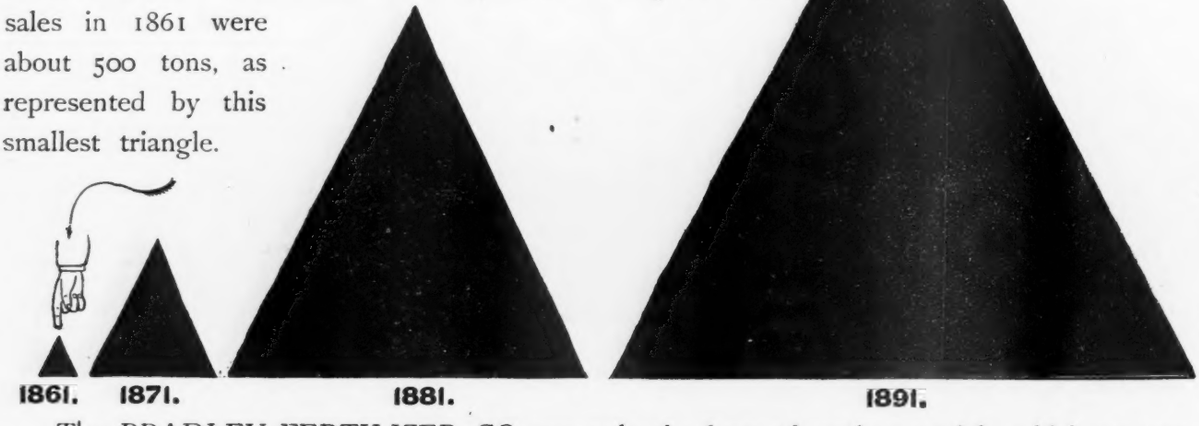
The Farmers' Choice Iron and Steel Roofing.

THE best made and lowest in price Easily applied and suitable for all buildings. Qualities the very best, also Corrugated Iron, Crimped edge, etc.

SYKES IRON & STEEL ROOFING CO. NILES, O., and CHICAGO, ILL
Write for Catalogue and Prices.

BRADLEY'S FERTILIZERS

The increase in yearly sales of BRADLEY'S FERTILIZERS by decades since 1861 is illustrated by these triangles. The sales in 1861 were about 500 tons, as represented by this smallest triangle.



The BRADLEY FERTILIZER CO. use only the best of crude materials, which are carefully prepared by approved machinery according to formulas based upon thorough field tests, thus furnishing the best plant-food possible to secure. These essential requisites, combined with liberal dealings with the farmers, have made the BRADLEY FERTILIZER CO. the largest manufacturers of Fertilizers in the world. For full information, address

BRADLEY FERTILIZER CO.
No. 27 Kilby Street, BOSTON.

WESTERN NEW YORK OFFICE:
26 E. MAIN STREET,
ROCHESTER, N. Y.

MATTERS OF BUSINESS.

(*Continued from Page 563.*)

running boiler from three to six months, and using coke for fuel, with forced draft, the nuts can be removed without trouble, as the heat has not been great enough to burn the lead." The graphite was made by the Jos. Dixon Crucible Co., Jersey City, N. J.

Don't Tobacco Spit Your Life Away is the startling, truthful title of a little book just received, telling all about *Notobac, the wonderful, harmless, economical, guaranteed cure for the tobacco habit in every form.* Tobacco users who want to quit and can't by mentioning AMERICAN AGRICULTURIST can get the book mailed free. Address THE STERLING REMEDY CO., Box 754 Indiana Mineral Springs, Ind.

Jellies, Jams, and Preserves.—What to preserve and how to do it? are questions satisfactorily answered in "Ayer's Preserve Book." Recipes for the newest, most delicious, and, at the same time, economical jams, jellies, and preserves are contained in this book. All are practical, having been tested by one of the most noted culinary authorities and housekeepers of the day. Ayer's Preserve Book mailed to any address on receipt of a two-cent stamp by J. C. Ayer Co., Lowell, Mass., if the AMERICAN AGRICULTURIST is mentioned.

Potato Machines.—The Aspinwall Manufacturing Company, of Three Rivers, Mich., have removed their entire plant to Jackson, Michigan, where they have erected new buildings equipped with the latest improved machinery. This old and reliable firm have manufactured potato planters and potato cutters for so many years that their name has become a household word in every farming community, and their customers will be pleased to learn that their new plant will furnish them with additional and better facilities.

Hog Cholera.—Who has not seen a circus sometime in his life? None have seen a hog circus, except the circus created by the farmer who has lost all his hogs by disease and could have saved them by the timely use of Dr. Haas' Hog Remedy but, misguided by well-meant, but injurious advice, fed copperas, carbolic acid, arsenic and other poisons, any one of which is sufficient to kill off the hogs in short order. Farmers wishing healthy hogs should not fail to keep on hand a good supply of Haas' Remedy, for it prevents and arrests disease, if fed according to directions.

Prosperity of Kansas—The State of Kansas is again attracting the attention of farmers throughout the country because of its series of successful crops in the past three years. In view of the large movement of agriculturists into that State, the Land Department of the Santa Fe Road is having prepared a new folder descriptive of the resources of the State, with revised maps, reliable statistics and other information. Anyone interested in this can obtain a copy free, by making written application to John J. Byrne, Assistant Passenger Traffic Manager, Atchison, Topeka & Santa Fe R. R., Chicago, Ill.

A "Daisy" Bone Cutter. — This machine is made by Wilson Bros., Easton, Pa., for cutting bones, with meat on, right from the butcher, or offal of bone and meat from the table; also cuts vegetables and scrap cake. The knives can be taken out when dull, sharpened and replaced in a few minutes. A large or small bone can be cut up at once. Very little pressure on the lever is required. The cutter is always ready for work. Turns easy, cuts fine and fast. It is simple in construction, nothing to get out of order. Can be turned by hand, or power, by running a belt on hand-wheel.

Lectures on Cooking. — Miss Maria Parloa, of Boston, the distinguished lecturer on the art of cooking, is to take entire charge of that department of the Exposition of foods to be held at Madison Square Garden, New York, in October next. The Concert Hall has been secured for that purpose, where Miss Parloa will lecture and give practical demonstrations in cooking, every afternoon during the Exposition. It is proposed to precede each of these lectures with a concert by the Seidl orchestra, with Herr Anton Seidl personally conducting. It is confidently believed that these concerts and lectures will prove a most popular feature.

American Wheel Company.—Some of the former stockholders of the American Wheel Company, through D. W. Mitchell, a Terre Haute capitalist, have purchased from the receiver of the property, the Fort Wayne Wheel Works, Fort Wayne Spoke Works, Indianapolis Wheel Works, Kalamazoo Wheel Works, Miamisburg Wheel Works, Ottawa, Wheel Works, Sandusky Wheel Works, and the Terre Haute Wheel Works. The total value is $1,272,196.42, and the price to be paid is $1,044,757.12. The bid excluded the works at Sidney, Ohio, and the Indianapolis and Boston offices, which will be sold later. The property is to be owned by Messrs. Mitchell, J. F. Pratt, Addison Bybee, Crawford Fairbank, of Terre Haute, and others, who have been in the company up to the time of sale; the sale is of course subject to the approval of the U. S. district court, the purchase price to be paid one-half in cash, and the rest in three promissory notes to be paid in six, twelve and fifteen months.

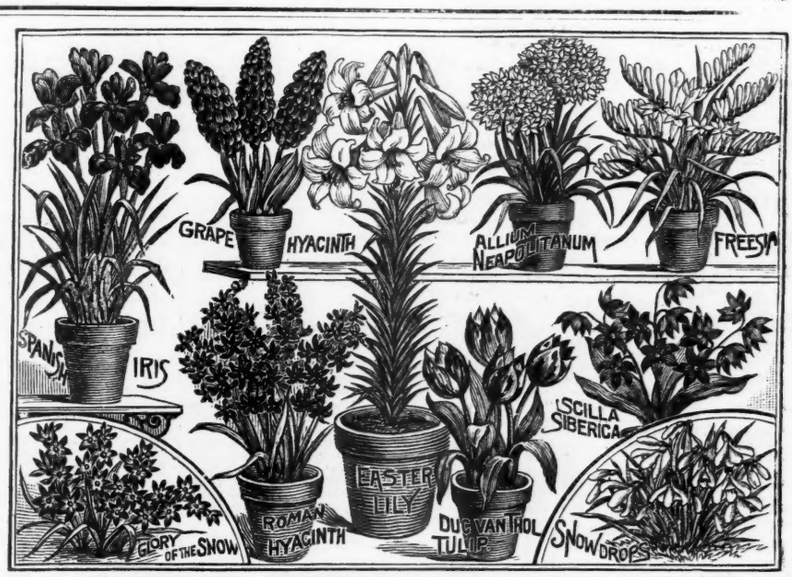
Barb-wire Cuts.

Apply Phénol Sodique before inflammation sets in. He will hardly know he is hurt. Better late than never. For all animals.

If not at your druggist's, send for circular.

HANCE BROTHERS & WHITE, Pharmaceutical Chemists, Philadelphia.

Look out for counterfeits. There is but one genuine. Better cut the advertisement out and have it to refer to.



LOVELY WINTER FLOWERS

For only **30** cents we will send by mail, postpaid, the following 10 elegant Bulbs which may be potted at once for winter blooming in your window, or planted in the garden for early Spring blooming:

1 Bulb Bermuda Easter Lily, the grandest winter flower, enormous white, sweet scented blossoms.
1 Bulb Roman Hyacinth, bears several spikes of beautiful white blossoms, very fragrant.
1 Bulb Grape Hyacinth, produces spikes of the most beautiful blue flowers.
1 Bulb Freesia, very fragrant, large white and yellow blossoms, in wonderful profusion.
1 Bulb Tulip, Duc Van Thol, beautiful intense scarlet; blooms very early.
1 Bulb Allium Neap., large clusters of snow-white blossoms, free bloomer.
1 Bulb Giant Snowdrop, great, drooping, waxy-white flowers of unsurpassed beauty.
1 Bulb Scilla, sprays of deep sky-blue blossoms of great beauty.
1 Bulb Spanish Iris, a lovely flower of various colors and a profuse bloomer.
1 Bulb Glory of the Snow, long sprays of large, light-blue flowers with white center.

Also our Superb Catalogue of Bulbs and Plants for Fall planting and Winter blooming, and a sample copy of THE MAYFLOWER with two elegant large colored plates. All the above for only 30 cents, postpaid. These 10 rare bulbs (worth 75 cents) are grand bloomers either for the house or garden. We send them for 30 cents only to introduce them. Get your neighbors to send with you and we will send 4 of these collections for $1.00. Directions for culture sent with each lot.

ALSO THE FOLLOWING SPECIAL OFFERS BY MAIL POSTPAID.

12 Mixed Tulips, double or single.....40c	**6 Giant Bermuda Freesias,** mixed.....15c
12 Mixed Parrot Tulips.....35c	**5 Grand Lilies,** 5 sorts, including Auratum.....50c
6 Mixed Hyacinths, double or single.....50c	**5 Fine named Cacti,** different sorts.....50c
6 Pompon Hyacinths, mixed, elegant.....35c	**4 New Perpetual Blooming Plants, fine winter bloomers, 50c**
25 Fine Mixed Crocus, all colors.....20c	**5 Lovely Everblooming Roses,** 5 sorts.....50c

OUR FALL CATALOGUE for 1892. A superb work of Art, large and illustrated, with colored plate, will be sent to any one on receipt of 5 cents. We offer the finest stock of Hyacinths, Tulips, Crocus, Narcissus, Lilies, Freesias, etc., and scores of rare new Bulbs and Plants for fall planting and winter blooming, also choice Shrubs and Fruits. It is the most beautiful and complete Catalogue of the kind ever issued. We want agents in every town to take subscribers for our beautiful Monthly Horticultural Paper (32 pages), **THE MAYFLOWER**, 50 cents per year. Liberal premiums. Sample copy free. Address

JOHN LEWIS CHILDS, Floral Park, N. Y.

HAPPY HOMES

By using the **BEVERIDGE COOKER.** Latest and simplest cooking utensil. No odor. **Food can't burn.** Saves labor and fuel. Cooks on oil, gas or coal stove. **Agents wanted,** either sex. **Big pay.** A lady sold **1730** in one town. Address, for terms,
W. E. BEVERIDGE, Baltimore, Md.

A CHANCE TO MAKE MONEY. Salary and paid, or commission if preferred. Expenses Salesmen wanted. No experience needed. Address, stating age.
THE C. L. VAN DUSEN NURSERY CO.,
Geneva, N. Y.

PEACH and other fruit trees, Carolina Poplars, Berry Plants. Good stock; low prices. **S. C. DE COU,** Moorestown, Burlington Co., N. J.

VIRGINIA,

ALBEMARLE COUNTY,

The great fruit, grain and stock-raising section of the State. Winters mild and short. Scenery beautiful. Health fine. Near the great markets. Educational advantages unsurpassed.

Land Good! Prices Cheap! Taxes Low!
Farms and City property for sale. Write to
WOODS & AYLETT, Charlottesville, Va.

BLOOMINGTON (PHŒNIX) NURSERY.
600 ACRES. 13 GREENHOUSES.

TREES AND PLANTS

We offer a large and fine stock of every description of **FRUIT and ORNAMENTAL TREES, Shrubs, Roses, Vines, Small FRUITS, Hedge Plants, FRUIT and FOREST TREE SEEDLINGS.** Priced Catalogue mailed free. **Established 1852.**

PHŒNIX NURSERY COMPANY
Successors to SIDNEY TUTTLE & CO., BLOOMINGTON, ILL.

State, County and Other Fairs in 1892.

PREPARED EXPRESSLY FOR THE AMERICAN ACRICULTURIST.

[*Copyright by the Orange Judd Co.—Other periodicals will give credit when copying this list.*]

STATE AND PROVINCIAL FAIRS.

Alabama	Birmingham	Nov. 9-19
American Institute	New York	Oct. 10-Dec. 10
California	Sacramento	Sept. 5-15
Canada	Toronto	Sept. 5-17
Canada "Central"	Ottawa	Sept. 22-Oct. 1
Canada	Montreal	Sept. 15-23
Connecticut	Meriden	Sept. 20-23
Delaware	Dover	Sept. 19-24
Georgia	Macon	Oct. 25-Nov. 4
Illinois	Peoria	Sept. 26-30
Illinois "Chicago Fat Stock"	Chicago	Nov. 16-26
Indiana	Indianapolis	Sept. 19-24
Iowa	Des Moines	Aug. 26-Sept. 2
Kansas	Topeka	Sept. 12-17
Kentucky	Lexington	Aug 30-Sept.3
Louisiana	Shreveport	Oct.31-Nov.5
Manitoba	Winnipeg	July 25-30
Maine	Lewiston	Sept. 6-9
Michigan	Lansing	Sept. 12-16
Michigan "International"	De	Aug. 23-Sept. 3
Minnesota	Ha	Sept. 5-10
Missouri	St. Louis	Oct. 3-8
Missouri	Sedalia	Aug. 15-20
Montana	Helena	Aug. 13-19
Nebraska	Lincoln	Sept. 5-9
New England	Worcester, Mass	Aug. 30-Sept. 2
New Hampshire	Tilton	Sept. 13-15
New Jersey "Waverly Park"	Newark	Sept. 19-23
New York	Syracuse	Sept. 8-15
New York, "Buffalo Exposition"	Buffalo	Aug. 17-27
New York "Interstate"	Elmira	Aug. 29-Sept.7
North Carolina	Raleigh	Oct. 18-21
Ohio	Columbus	Sept. 12-16
Ohio "Interstate"	Toledo	Sept. 5-10
Oregon	Salem	Sept. 12-17
Pennsylvania	Scranton	Sept. 5-10
*Rhode Island	"Narragansett Park" Cranston	Sept. 19-23
South Carolina	Columbia	Nov. 7-11
South Dakota	Sioux Falls	Sept. 12-16
Texas	Dallas	Oct. 17-30
Texas	McGregor	Oct. 6-14
Vermont	White River Junction	Sept. 13-16
Virginia	Richmond	Oct. 6-26
Washington	Walla Walla	Sept. 6-Oct. 1
West Virginia	Wheeling	Sept. 5-9
Wisconsin	Milwaukee	Sept. 12-16
*Prince Edward Island	Charlottetown	Sept. 23-30

ALABAMA.

Butler	Greenville	Oct. 25-29
Boone	Harrison	Oct. 5-8

ARKANSAS.

Bradley	Warren	Oct. 19-21
Ouachita	Camden	Oct. 25-29
St. Francis	Forrest City	Oct. 4-6

ARKANSAS DISTRICT.

Hempstead	Hope	Oct. 18-22
Phillips	Helena	Oct. 18-21

CALIFORNIA.

Amador	Ione	Sept. 27-30
Fresno	Fresno	Sept. 26-Oct. 1
Inyo	Independence	Sept. 27-30
Lassen	Susanville	Oct. 3-7
Napa	Napa	Aug. 22-27
Nevada	Nevada City	Aug. 23-28
Plumas	Sierraville	Oct. 3
San Benito	Hollister	Oct. 11-15
San Joaquin	Stockton	Sept. 19-Oct. 1
San Luis Obispo	San Luis Obispo	Sept. 27-Oct. 1
Santa Barbara	Santa Barbara	Aug.23-27
Santa Clara	San Jose	Sept. 26-Oct. 5
Santa Cruz	Santa Cruz	Oct. 15
Stanislaus	Modesto	Sept. 28-Oct. 1
Tehama	Red Bluff	Aug. 16-20

COLORADO.

Gunnison	Gunnison	Sept. 27-30

CONNECTICUT.

Hartford	Collinsville	Sept. 28-29
Litchfield	New Milford	Sept. 7-9
New London	Norwich	Sept. 27-29
New Haven	Guilford	Sept. 28
Tolland	Rockville	Sept. 13-15
Tolland	Stafford Springs	Oct. 11-13
Windham	Brooklyn	Sept. 20-22
Windham	Willimantic	Oct. 4-6
Windham	Danielsonville	Sept.20-22

CONNECTICUT DISTRICT.

Fairfield	Huntington	Sept. 20-22
Litchfield	Watertown	Sept.13-15

DELAWARE.

Kent	Dover	Sept. 19-24

GEORGIA.

Jefferson	Louisville	Nov. 2-4
Warren	Warrenton	Oct. 19-21

ILLINOIS.

Adams	Camp Point	Aug. 29-Sept. 2
Adams	Quincy	Aug. 29-Sept. 2
Alexander	Cairo	Sept. 6-9
Boone	Belvidere	Aug. 30-Sept. 2
Brown	Mt. Sterling	Aug.15-19
Bureau	Princeton	Sept. 6-9
Carroll	Mt. Carroll	Sept. 6-9
Champaign	Champaign	Aug. 30-Sept. 2
Champaign	Homer	Aug. 9-12
Christian	Assumption	Sept. 6-10
Coles	Charleston	Sept. 6-10
De Kalb	Sandwich	Sept. 5-9
De Witt	Clinton	Aug. 8-12
De Witt	Farmer City	Aug. 30-Sept. 2
Du Page	Wheaton	Sept. 6-9
Edgar	Paris	Aug. 29-Sept. 2
Edwards	Albion	Sept. 27-30
Effingham	Watson	Sept. 20-23
Fayette	Vandalia	Sept. 6-9
Franklin	Benton	Sept. 20-23
Fulton	Avon	Aug. 30-Sept. 2
Fulton	Canton	Sept. 20-23
Gallatin	Shawneetown	Aug. 30-Sept. 3
Greene	Carrollton	Aug. 23-26
Hamilton	McLeansboro	Aug. 16-19
Hancock	Carthage	Sept. 5-9
Hancock	La Harpe	Aug. 29-Sept. 2
Hardin	Elizabethtown	Aug. 9-13
Henry	Kewanee	Sept. 12-16
Iroquois	Milford	Aug. 23-26
Jasper	Newton	Sept. 13-16
Jersey	Jerseyville	Oct. 11-14
Jo Daviess	Galena	Oct. 4-7
Johnson	Vienna	Sept. 13-16
Kankakee	Kankakee	Sept. 13-16
Kendall	Yorkville	Aug. 30-Sept. 2
Knox	Knoxville	Sept. 5-9
Lake	Libertyville	Sept. 20-23
Livingston	Fairbury	Sept. 5-9
Logan	Atlanta	Sept. 6-9
Macon	Macon	Aug. 16-19
Macoupin	Carlinville	Aug. 30-31
McDonough	Macomb	Aug. 22-26
McHenry	Woodstock	Aug. 30-Sept. 2
McLean	Bloomington	Sept. 13-16
McLean	Saybrook	Aug. 23-26
Menard	Petersburg	Aug. 30-Sept. 2
Mercer	Aledo	Sept. 20-23
Morgan	Jacksonville	Aug. 23-26
Moultrie	Sullivan	Aug. 30 Sept. 3
Ogle	Oregon	Sept. 20-23
Ogle	Rochelle	Sept. 13-16
Peoria	Dunlap	Sept. 14-16
Perry	Pinckneyville	Oct. 4-7
Platt	Monticello	Aug. 15-19
Pike	Griggsville	Aug. 8-12
Richland	Olney	Oct. 17-21
Saline	Harrisburg	July 26-29
Sangamon	Springfield	Sept. 5-9
Schuyler	Rushville	Aug. 8-12
Shelby	Shelbyville	Aug. 23-27
Stark	Toulon	Sept. 20-23
Stark	Wyoming	Aug. 30-Sept. 2
Stephenson	Freeport	Sept. 13-16
Tazewell	Delavan	Aug. 23-26
Tazewell	Mackinaw	Aug. 30-Sept. 2
Union	Anna	Aug. 30-Sept. 2
Union	Jonesboro	Sept. 13-23
Vermillion	Catlin	Aug. 16-19
Vermillion	Danville	Sept. 5-8
Vermillion	Hoopeston	Aug. 29-Sept. 2
Wabash	Mt. Carmel	Sept. 13-16
Warren	Monmouth	Sept. 12-16
White	Carmi	Sept. 6-10
Williamson	Marion	Sept. 27-30
Winnebago	Rockford	Sept. 5-9
Woodford	El Paso	Sept. 12-16

ILLINOIS DISTRICT.

Christian	Assumption	Sept. 5-9
Christian	Pana	Aug. 30-Sept. 3
La Salle	Mendota	Aug. 30-Sept. 2
McDonough	Bushnell	Aug. 16-19
St. Clair	Belleville	Sept. 6-9
Saline	Eldorado	Aug. 1-5
Whiteside	Morrison	Sept. 6-9

INDIANA.

Benton	Boswell	Sept. 5-9
Boone	Lebanon	Aug. 15-19
Carroll	Camden	Sept. 5-9
Carroll	Carroll	Sept. 26-30
Clark	Charlestown	Sept. 5-9
Clinton	Frankfort	Aug. 22-26
Crawford	Marengo	Sept. 5-10
Daviess	Washington	Sept. 19-24
Dearborn	Lawrenceburg	Aug. 23-27
Decatur	Greensburg	Aug. 29-Sept. 2
Delaware	Muncie	Aug. 15-19
Dubois	Huntingburgh	Sept. 12-17
Floyd	New Albany	Sept. 12-16
Fountain	Covington	Sept. 12-16
Fulton	Rochester	Aug. 31-Sept. 3
Gibson	Princeton	Sept. 5-10
Grant	Marion	Sept. 27-30
Grant	Fairmount	Sept. 12-17
Greene	Bloomfield	Sept. 12-17
Greene	Linton	Aug. 29-Sept. 2
Hamilton	Sheridan	Aug. 29-Sept. 2
Hancock	Vincenfield	Aug. 22-26
Harrison	Corydon	Aug. 29-Sept. 2
Henry	Middletown	Aug. 9-12
Henry	New Castle	Aug. 9-13
Howard	Poplar Grove	Sept. 26-30
Huntington	Huntington	Sept. 13-17
Huntington	Warren	Sept. 6-10
Indiana	Evansville	Sept. 26-Oct. 1
Jay	Portland	Sept. 26-30
Jefferson	Madison	Aug. 16-19
Jennings	North Vernon	Aug. 9-12
Johnson	Franklin	Sept. 13-17
Knox	Vincennes	Oct. 10-15
Koscinsko	Warsaw	Oct. 5-8
Lake	Crown Point	Sept. 27-30
La Porte	La Porte	Sept 27-30
Lawrence	Bedford	Oct. 3-8
Marshall	Bourbon	Oct. 4-7
Marshall	Bremen	Sept. 27-30
Marshall	Marmont	Sept. 13-16
Marshall	Maxinkuckee	Sept. 13-16
Marshall	Plymouth	Sept. 20-23
Miami	Macy	Sept. 7-10
Miami	Peru	Sept. 13-16
Monroe	Bloomington	Sept. 26-Oct. 1
Scott	Scottsburgh	Aug. 30-Sept. 2
Shelby	Shelbyville	Sept. 6-10
Spencer	Rockport	Sept. 19-24
Steuben	Angola	Sept. 20-23
Sullivan	Sullivan	Sept. 5-10
Switzerland	East Enterprise	Aug. 30-Sept. 2
Tippacanoe	Lafayette	Aug. 29-Sept. 2
Tipton	Tipton	Aug. 8-13
Vanderburgh	Evansville	Sept. 26-Oct.1
Vermillion	Cayuga	Sept. 19-23
Vermillion	Newport	Oct 3-7
Vigo	Terre Haute	Aug. 22-26
Wabash	North Manchester	Sept. 27-30
Wabash	Wabash City	Sept. 20-23
Warren	West Lebanon	Sept. 27-30
Warrick	Boonville	Aug. 29-Sept. 3
Washington	Salem	Aug. 23-26
Wayne	Dalton	Aug. 23-26
Wayne	Hagerstown	Aug. 16-19
Whitley	Columbia City	Oct. 4-7

INDIANA DISTRICT.

DeKalb	Auburn	Sept. 12-16
DeKalb	Waterloo	Oct. 3-7
Elkhart	Goshen	Oct. 3-7
Gibson	Oakland City	Aug. 22-27
Hendricks	North Salem	Aug. 1-5
Henry	Knightstown	Aug. 30-Sept. 3
Montgomery	Crawfordsville	Sept. 5-9
Montgomery	New Ross	Aug. 8-12
Newton	Kentland	Sept. 6-9
Newton	Morocco	Sept. 20-23
Noble	Kendallville	Sept. 26-30
Noble	Ligonier	Sept. 19-23
Owen	Spencer	Aug. 15-20
Perry	Rome	Oct. 3-8
Pike	Petersburg	Aug. 29-Sept. 3
Porter	Valparaiso	Sept. 20-23
Posey	New Harmony	Sept. 12-16
Pulaski	Francesville	Sept. 13-16
Pulaski	Winamac	Sept.27-30
Putnam	Bainbridge	Aug. 29-Sept. 3
Randolph	Winchester	Aug. 30-Sept. 3
Rush	Rushville	Sept. 13-17
St. Joseph	Mishawaka	Sept. 12-16
St. Joseph	South Bend	Sept. 12-16
Parke	Bridgeton	Aug. 8-13
Ripley	Osgood	Aug. 2-5
Washington	Pekin	Sept. 20-23

IOWA.

Adams	Corning	Sept. 19-23
Allamakee	Waukon	Sept. 12-16
Appanoose	Centerville	Sept. 20-23
Audubon	Audubon	Sept. 12-15
Benton	Vinton	Sept. 13-16
Boone	Ogden	Sept. 6-9
Buchanan	Independence	Sept. 13-16
Buena Vista	Alta	Sept 7-9
Calhoun	Rockwell City	Sept. 14-17
Carroll	Carroll	Sept. 20-23
Cass	Atlantic	Sept. 5-8
Cedar	Tipton	Aug. 30-Sept. 2
Cedar	West Branch	Aug. 23-26
Cerro Gordo	Mason City	Sept. 27-29
Cherokee	Marcus	Sept. 20-23
Chickasaw	New Hampton	Sept. 7-9
Clarke	Osceola	Sept. 6-9
Clayton	National	Sept. 6-9
Clayton	Garnaville	Sept. 6-9
Clinton	DeWitt	Sept. 13-16
Crawford	Denison	Sept. 15-17
Dallas	Adel	Sept. 20-23
Davis	Bloomfield	Sept. 20-23
Decatur	Leon	Sept. 19-23
Delaware	Manchester	Sept. 13-16
Des Moines	Burlington	Sept. 12-17
Dubuque	Cascade	Sept. 13-16
Fayette	West Union	Aug. 30-Sept. 2
Floyd	Charles City	Sept. 13-15
Franklin	Hampton	Sept. 13-16
Greene	Jefferson	Aug. 16-20
Grundy	Grundy Center	Sept 13-16
Hamilton	Webster City	Sept.13-16
Hancock	Britt	Sept. 20-23
Hardin	Eldora	Sept. 6-9
Harrison	Missouri Valley	Sept. 27-30
Howard	Cresco	Aug. 23-26
Humboldt	Humboldt	Sept. 27-30
Ida	Battle Creek	Sept. 13-15
Iowa	South Amana	Sept. 6-9
Jackson	Maquoketa	Sept. 20-23
Jasper	Newton	Sept. 20-23
Jefferson	Fairfield	Sept. 13-15
Johnson	Iowa City	Sept. 12-15
Jones	Anamosa, Aug. 30-Sept. 1	
Jones	Monticello	Sept. 5-9
Keokuk	Sigourney	Sept..6-9
Kossuth	Algona	Sept. 20-23
Lee	Donnellson	Sept. 6-9
Louisa	Wapello	Sept. 6-9
Lucas	Chariton	Sept. 6-9
Madison	Winterset	Oct. 3-6
Mahaska	Oskaloosa	Sept. 5-8
Marion	Knoxville	Sept. 20-23
Mills	Malvern	Sept.20-23
Mitchell	Osage	Sept. 14-16
Montgomery	Red Oak	Sept. 12-16
Muscatine	Muscatine	Sept. 13-16
Osceola	Sibley	Sept. 22-23
Page	Clarinda	Aug. 29-Sept. 2
Palo Alto	Emmettsburg	Sept. 14-16
Pocahontas	Fondo	Sept. 13-16
Poweshiek	Grinnell	Sept. 5-8
Poweshiek	Malcolm	Aug. 23-26
Ringgold	Mount Ayr	Sept. 13-16
Sac	Sac City	Sept. 20-22
Scott	Davenport	Sept. 5-9
Shelby	Harlan	Aug. 23-26
Tama	Toledo	Sept. 27-30
Taylor	Bedford	Sept. 6-9
Union	Afton	Sept. 27-30
Van Buren	Keosauqua	Aug. 23-26
Wapello	Ottumwa	Aug. 15-19
Warren	Indianola	Sept. 13-16
Washington	Washington	Sept. 22-23
Wayne	Corydon	Sept. 12-16
Webster	Ft. Dodge	Oct., 4-7
Winnebago	Forest City	Sept. 13-17
Winneshiek	Decorah	Sept. 6-9
Worth	Northwood	Sept. 14-16
Wright	Clarion	Sept. 13-16

IOWA DISTRICT.

Appanoose	Moulton	Sept. 27-30
Boone	Boone	Aug. 22-25
Carroll	Manning	Sept. 6-8
Cedar	Mechanicsville	Sept. 20-23
Clayton	Strawberry Point	Sept. 20-23
Dallas	Perry	Sept. 13-16
Fayette	Brush Creek	Sept. 6-8
Henry	Winfield	Aug. 30-Sept. 2
Iowa	Victor	Sept. 12-14
Jones	Anamosa	Aug.30-Sept.2
Keokuk	What Cheer	Sept. 27-30
Lee	Keokuk	Aug. 2-5
Lee	West Point	Sept. 27-30
Linn	Fairfax	Sept. 6-9
Linn	Central City	Sept. 13-16
Mahaska	New Sharon	Sept. 13-16
Marion	Pella	Sept. 27-29
Marion	Tracy	Sept. 13-15
Monona	Mapleton	Sept. 21-24
Muscatine	West Liberty	Sept. 6-9
Page	Shenandoah	Sept. 27-30
Poweshiek	Brooklyn	Sept. 14-16
Sac	Odebolt	Sept. 27-29
Shelby	Shelby	Sept. 27-30
Scott	Mt. Joy	Aug. 30-Sept. 2
Tama	Traer	Sept. 20-22
Taylor	Lenox	Sept. 27-Oct. 1
Union	Creston	Aug. 22-27
Van Buren	Milton	Sept. 13-16
Wapello	Agency	Sept 27-30
Wapello	Eldon	Sept. 5-9
Wayne	Seymour	Sept. 26-30
Wright	Eagle Grove	Sept. 20-30

KANSAS.

Anderson	Garnett	Aug. 30-Sept. 1
Brown	Hiawatha	Sept. 7-9
Cheyenne	St. Francis	Oct. 6-8
Coffey	Burlington	Sept. 19-23
Cowley	Winfield	Aug. 30-Sept. 2
Crawford	Girard	Aug. 30-Sept. 2
Dickinson	Herington	Sept. 6-9
Ellis	Hays City	Sept. 22-24
Finney	Garden City	Oct. 10-15
Franklin	Lane	Sept. 13-16
Franklin	Ottawa	Sept. 29-30
Franklin	Williamsburg	Sept. 1-3
Grant	Ulysses	Oct. 5-6
Greeley	Horace	Sept. 14-16
Jackson	Holton	Oct. 4-7
Jefferson	Oskaloosa	Sept. 27-29
Johnson	Edgerton	Sept. 6-9
Linn	La Cygne	Sept. 27-30
Linn	Mound City	Sept. 6-9
Logan	Russell Springs	Sept. 14-16
Marion	Peabody	Aug. 17-19
Marshall	Frankfort	Sept. 20-23
Morris	Council Grove	Sept.27-30
Miami	Paola	Oct. 4-7
Montgomery	Independence	Sept.13-16
Nemaha	Sabetha	Sept. 27-30
Neosho	Erie	Oct. 4-7
Orange	Paoli	Aug. 30-Sept. 3
Osage	Burlingame	Sept. 20-23
Phillips	Phillipsburgh	Sept. 20-23
Pottowatomie	Wamego	Sept. 20-23
Riley	Riley	Sept. 6-9
Rooks	Plainville	Sept. 28-30
Rush	La Crosse	Sept. 14-16
Saline	Salina	Sept. 13-16
Sedgwick	Wichita	Sept. 26-Oct. 2
Wilson	Fredonia	Sept. 6-9

KENTUCKY.

Adair	Columbia	Aug. 9-12
Anderson	Lawrenceburg	Aug. 9-11
Barren	Glasgow	Sept. 27-30
Bath	Sharpsburg	Aug. 9-12
Bourbon	Paris	Sept. 6-10
Boyle	Danville	Aug. 2-6
Caldwell	Princeton	Oct. 5-8
Campbell	Alexandria	Aug. 30-Sept. 3
Christian	Hopkinsville	Oct. 12-15
Clark	Winchester	Sept. 13-17
Daviess	Owensboro	Oct. 4-8
Fayette	Lexington	Aug. 30-Sept. 3
Hardin	Elizabethtown	Sept. 13-16
Harrison	Cynthiana	Sept. 21-24
Hart	Horse Cave	Sept. 20-23
Henderson	Henderson	Aug. 23-27
Henry	Eminence	July 19-23
Hopkins	Madisonville	Aug. 31-Sept. 3
Jefferson	Fern Creek	Aug. 16-18
Jessamine	Nicholasville	Aug. 16-20
Laurel	London	Aug. 24-26
Madison	Richmond	July 19-22
Marion	Lebanon	Aug. 23-26
Mason	Germantown	Sept. 28-Oct. 1
Mason	Maysville	Aug. 23-27
Mercer	Harrodsburg	July 26-29
Montgomery	Mt. Sterling	Sept. 29-Oct. 1
Muhlenberg	Greenville	Oct. 12-15
Nelson	Bardstown	Sept. 6-10
Ohio	Hartford	Sept. 28-Oct. 1
Oldham	La Grange	Aug. 30-31
Owen	Owentown	Oct. 4-8
Pulaski	Somerset	Sept. 13-16
Shelby	Shelbyville	Aug. 23-27
Simpson	Franklin	Aug. 30-Sept. 3
Taylor	Campbellsville	Aug. 16-19
Union	Uniontown	Aug. 16-20

Warren.....Bowling Green...Sept. 6
Woodford.....Versailles.....Aug. 1-5

MAINE.

Aroostook.....Houlton.....Sept. 28-29
Franklin.....Farmington...Sept. 27-29
Oxford.....Between villages of Norway and So. Paris Sept. 13-15
Penobscot.....Bangor...Aug. 30-Sept. 2
Sagadahoe.....Topsham.....Oct. 11-13

MARYLAND.

Baltimore.....Timonium Aug. 30-Sept. 2
Cecil.....Elkton.....Sept. 6-9
Frederick.....Frederick City Oct. 11-14
Harford.....Belair.....Oct 11-14
Montgomery.....Rockville.....Sept. 7-9
Talbot.....Easton.....Sept. 13-16
Washington.....Hagerstown...Oct. 11-14

MASSACHUSETTS.

Barnstable.....Barnstable....Sept. 13-14
Berkshire.....Great Barrington Sept. 28-30
Berkshire.....North Adams.Sept. 20-22
Berkshire.....Pittsfield....Sept. 13-16
Bristol.....Taunton.....Sept. 28-30
Essex.....Lawrence.....Sept. 27-28
Franklin.....Charlemont...Sept. 15-16
Franklin.....Greenfield...Sept. 22-23
Hampden.....Palmer.....Sept. 20-21
Hampshire.....Northampton.Sept. 20-21
Middlesex.....Framingham...Sept. 7-8
Middlesex.....Lowell.....Sept. 13-15
Middlesex.....South Framingham Sept. 13-14
Nantucket.....Nantucket....Sept. 7-8
Plymouth.....Bridgewater..Sept. 21-23
Plymouth.....Hingham....Sept. 27-28
Worcester.....Athol.....Oct. 4-5
Worcester.....Barre.....Sept. 29-30
Worcester.....Oxford.....Sept. 20-21
Worcester.....Sturbridge....Sept. 15-16
Worcester.....Worcester Aug.30-Sept.2

MICHIGAN.

Allegan.....Allegan...Sept. 27-Oct. 1
Antrim.....Bellaire.....Sept. 27-29
Barry.....Hastings.....Sept. 27-30
Branch.....Coldwater.....Sept. 26-30
Calhoun.....Marshall.....Sept. 27-30
Cass.....Dowagiac.....Oct. 4-7
Charlevoix.....East Jordan..Sept. 20-22
Genesee.....Flint.....Sept. 20-23
Hillsdale.....Hillsdale.....Oct. 3-7
Ingham.....Stockbridge.....Oct. 4-6
Ionia.....Ionia.....Sept. 27-30
Isabella.....Mt. Pleasant..Sept. 27-30
Kalamazoo.....Kalamazoo....Sept. 27-30
Kent.....Cedar Springs Sept. 13-16
Kent.....Grand Rapids Sept. 19-23
Lapeer.....Hadley.....Oct. 4-6
Lapeer.....Lapeer.....Sept. 21-23
Lenawee.....Adrian.....Sept. 26-30
Lenawee.....Morenci.....Sept. 14-16
Livingston.....Howell.....Sept. 27-30
Macomb.....Armada.....Sept. 28-30
Mecosta.....Big Rapids.....Oct. 4-6
Midland.....Midland.....Sept. 21-23
Monroe.....Petersburgh.....Sept. 7-9
Oakland.....Pontiac.....Sept. 27-30
Oceana.....Hart.....Sept. 27-30
Otsego.....Gaylord.....Sept. 23-25
St Joseph.....Centreville....Oct 11-14
Tuscola.....Caro.....Sept. 27-30
Washtenaw.....Ann Arbor....Sept. 27-30
Wayne.....Plymouth.....Sept. 27-30

MINNESOTA.

Anoka.....Anoka.....Sept. 1-3
Cottonwood.....Windom.....Sept. 21-22
Fillmore.....Preston.....Sept. 13-16
Freeborn.....Albert Lea Sept. 29-Oct. 1
Houston.....Caledonia.....Sept. 22-25
Jackson.....Jackson.....Sept. 29-30
Martin.....Fairmont.....Sept. 15-17
Meeker.....Litchfield.....Sept. 15-17
Mower.....Austin.....Sept. 13-15
Murray.....Currie.....Sept. 15-16
Nicollet.....St. Peter.....Sept. 15-17
Nobles.....Worthington..Sept. 27-29
Olmsted.....Rochester....Sept. 12-17
Ramsey.....Hamline.....Sept. 5-10
Redwood.....Redwood Falls Sept. 21-23
Steele.....Owatonna.....Sept. 15-17
Stevens.....Morris.....Oct. 7-8
Todd.....Long Prairie..Sept. 20-22
Wilkin.....Breckenridge.Sept. 26-28

MISSOURI.

Adair.....Kirksville .....Sept. 5-9
Audrain.....Mexico.....Aug. 1-6
Atchison.....Rock Port.....Sept. 20-23
Caldwell.....Hamilton Aug. 30-Sept. 2
Callaway.....Fulton.....Aug. 8-13
Cape Girardeau...Cape Girardeau Oct. 11-15
Clark.....Kahoka...Aug. 30-Sept. 2
Clinton.....Cameron.....Sept. 6-10
Dade.....Lockwood....Sept. 20-23
Daviess.....Jamesport.....Sept. 6-9
Gasconade.....Hermann.....Sept. 2-3
Gentry.....Albany...Aug. 30-Sept. 2
Greene.....Springfield....Sept. 5-10
Grundy.....Trenton.....Sept. 13-16
Harrison.....Ridgeway.....Sept. 6-9
Jackson.....Kansas City.....Oct. 1-9
Johnson.....Holden.....Aug. 23-26
Lafayette.....Higginsville...Aug. 24-27
Lincoln.....Troy.....Sept. 6-9
Livingston.....Chillicothe....Sept. 26-30
Macon.....LaPlata..Aug. 30-Sept. 2
Marion.....Palmyra.....Sept. 27-30
Manitteau.....California.....Sept. 20-23
Monroe.....Paris.....Sept. 13-17
Platte.....Platte City Aug. 30-Sept.3
Polk.....Bolivar...Aug. 31-Sept. 3
Putnam.....Unionville Aug. 31-Sept.3
Randolph.....Moberly.....Aug. 9-13
Scotland.....Memphis.....Sept. 6-9
St. Charles.....St. Charles....Sept. 14-15
Sullivan.....Milan.....Sept. 6-10

MISSISSIPPI.

Grenada.....Grenada....Oct. 26-28
Noxubee.....Macon.....Oct. 4-7

NEBRASKA.

Antelope.....Neligh.....Sept. 21-23
Butler.....David City....Sept. 20-23
Brown.....Long Pine.....Sept. 16-19
Buffalo.....Kearney.....Oct. 4-7
Burt.....Tekamah.....Sept. 13-16
Cass.....Plattsmouth..Sept. 13-16
Cheyenne.....Sidney.....Sept. 28-30
Clay.....Clay Center...Sept. 13-16
Colfax.....Schuyler.....Sept. 14-16
Custer.....Broken Bow.....Oct. 4-7
Dawson.....Lexington.....Sept. 27-30
Dixon.....Ponca.....Sept. 13-16
Dodge.....Fremont.....Sept. 19-23
Douglas.....Omaha....Aug. 30-Sept. 2
Fillmore.....Geneva.....Sept. 13-16
Franklin.....Franklin.....Sept. 27-30
Gosper.....Elwood.....Sept. 15-17
Hall.....Grand Island. Sept. 27-30
Hamilton.....Aurora.....Sept. 13-16
Hitchcock.....Culbertson.....Sept. 27-30
Holt.....O'Neill.....Oct. 4-7
Johnson.....Tecumseh....Sept. 28-30
Kearney.....Minden.....Sept. 13-16
Keith.....Ogallala.....Sept. 13-15
Lincoln.....North Platte..Sept. 20-23
Madison.....Madison.....Sept. 20-23
Nemaha.....Auburn.....Sept. 27-30
Otoe.....Syracuse.....Sept. 13-16
Perkins.....Madrid.....Sept. 21-23
Platte.....Columbus.....Sept. 28-30
Polk.....Osceola...Aug. 30-Sept. 2
Richardson.....Falls City.....Oct. 4-7
Sarpy.....Papillion.....Sept. 13-16
Seward.....Seward.....Sept. 27-30
Saunders.....Wahoo.....Sept. 27-30
Stanton.....Stanton.....Oct. 5-7
Thayer.....Hebron.....Sept. 27-30
Valley.....Ord.....Sept. 20-23
Webster.....Red Cloud.....Oct. 4-7
York.....York.....Sept. 20-23
Nevada.....Washoe-Reno Sept. 19-24

NEW HAMPSHIRE.

Belknap.....Tilton.....Sept. 13-15
Cheshire.....Rindge.....Sept. 28
Coos.....Colebrook.....Sept. 28-29
Grafton.....Canaan.....Sept 20-22
Rockingham.....South Hampton..Oct. 5-6
Strafford.....Rochester.....Sept. 27-30

NEW JERSEY.

Atlantic.....Egg Harbor City Sept. 24-26
Burlington.....Mt. Holly.....Sept. 12-16
Cumberland.....Bridgeton.....Aug. 23-25
Mercer.....Trenton.....Sept. 26-30
Salem.....Woodstown Aug. 30-Sept. 1
Somerset.....Somerville....Sept. 13-16

NEW MEXICO.

Bernalillo.....Albuquerque.Sept. 12-17

NEW YORK.

Albany.....Albany.....Sept. 19-24
Allegany.....Angelica.....Sept. 6-8
Allegany.....Cuba.....Sept. 19-23
Broome.....Binghamton..Sept. 20-28
Broome.....Whitney's Point Sept. 6-9
Broome.....Windsor.....Sept. 13-16
Cattaraugus..Little Valley..Sept. 5-8
Cayuga.....Moravia.....Sept. 20-23
Cayuga.....Genoa.....Sept. 6-9
Cayuga.....Weedsport.....Sept 27-30
Chautauqua.....Jamestown...Sept. 20-23
Chemung.....Elmira.....Oct. 4-7
Chenango.....Greene.....Sept. 13-16
Chenango.....Norwich.....Sept. 13-16
Clinton.....Plattsburgh...Sept. 13-16
Columbia.....Chatham.....Sept. 6-9
Columbia.....Hudson...Aug. 30-Sept. 1
Delaware.....Delhi.....Sept. 20-22
Dutchess.....Pough eepsie Sept. 27-30
Erie.....Hamburgh...Sept. 20-23
Essex.....Westport.....Sept. 5-8
Franklin.....Malone.....Sept. 20-22
Fulton.....Johnstown.....Sept. 5-8
Genesee.....Batavia.....Sept. 19-22
Greene.....Cairo.....Aug. 30-Sept. 1
Herkimer.....Herkimer.....Sept. 27-29
Jefferson.....Watertown....Sept. 20-23
Lewis.....Lowville.....Sept. 13-16
Livingston.....Dansville.....Sept. 6-9
Livingston.....Hemlock Lake...Oct. 5-6
Livingston.....Geneseo.....Oct. 2-4
Madison.....Brookfield....Sept. 20-22
Monroe.....Rochester.....Sept. 26-30
Monroe.....Brockport Sept. 29-Oct. 1
Montgomery.....Fonda.....Sept. 12-15
Niagara.....Lockport.....Sept. 15-17
Oneida.....Rome.....Sept. 19-23
Ontario.....Canandaigua..Sept. 20-22
Orange.....Warwick.....Sept. 20-23
Orleans.....Albion.....Sept. 22-24
Oswego.....Oswego Aug. 30-Sept. 2
Otsego.....Cooperstown..Sept. 19-21
Putnam.....Carmel.....Aug. 23-26
Queens.....Mineola.....Sept. 27-30
Rockland.....Spring Valley Sept. 27-30
St Lawrence.....Canton.....Sept. 13-16
Saratoga.....Ballston.....Sept. 6-9
Schoharie.....Cobleskill.....Sept. 26-29
Schoharie.....Schoharie.....Sept. 21-23
Schuyler.....Watkins.....Sept. 14-17
Seneca.....Waterloo.....Sept. 27-29
Steuben.....Bath.....Sept. 27-30
Steuben.....Hornellsville..Aug. 22-26
Suffolk.....Riverhead.....Oct. 4-6
Sullivan.....Monticello.....Sept. 6-9
Tioga.....Newark Valley Aug. 30-Sept. 2
Tioga.....Owego.....Sept. 13-15
Tompkins.....Ithaca.....Sept. 13-16
Tompkins.....Dryden.....Sept. 27-29
Tompkins.....Trumansburg Sept. 27-29
Ulster.....Ellenville.....Sept. 13-15
Warren.....Glen Falls.....Sept. 6-9
Washington.....Fort Edward..Sept. 12-15
Washington.....Cambridge.....Sept. 6-9
Wayne.....Lyons.....Sept. 28-Oct. 1
Wayne.....Newark.....Sept. 14-17
Westchester.....White Plains Sept. 26-Oct. 1
Wyoming.....Warsaw.....Sept. 27-28
Yates.....Penn Yan.....Sept. 20-23

NORTH CAROLINA.

Rowan.....Salisbury.....Oct. 4-7

OHIO.

Adams.....West Union...Sept. 13-16
Allen.....Lima.....Sept. 13-16
Ashland.....Ashland..Aug. 30-Sept. 2
Ashtabula.....Jefferson.....Sept. 27-30
Athens.....Athens.....Sept. 20-22
Auglaize.....Wapakoneta .....Oct. 4-7
Auglaize.....New Bremen Aug. 30-Sept. 2
Champaign.....Urbana..... Aug. 23-26
Champaign.....Mechanicsburg Aug. 16-19
Carroll.....Carrollton.....Oct. 4-7
Clark.....Springfield Aug. 30-Sept. 2
Clermont.....Boston....Aug. 29-Sept. 2
Clinton.....Sabina....Aug. 30-Sept. 2
Clinton.....Wilmington ....Sept. 6-9
Columbiana.....Salem.....Oct. 4-7
Columbiana.....Wellsville.....Aug. 23-26
Coshocton.....Coshocton .....Oct. 11-14
Crawford.....Bucyrus .....Sept. 20-23
Darke.....Greenville.....Sept. 5-9
Erie.....Sandusky.....Sept. 20-23
Fairfield.....Lancaster .....Oct. 11-14
Fayette.....Washington, C. H. Aug. 23-26
Fulton.....Ottokee.....Sept. 20-23
Gallia.....Gallipolis.....Aug. 8-12
Geauga.....Burton .....Sept. 6-9
Greene .....Xenia .....Aug. 16-19
Guernsey.....Washington ..Sept. 27-30
Hancock.....Findlay ..Sept. 27-Oct. 1
Hardin.....Ada.....Aug. 30-Sept. 2
Hardin.....Kenton.....Sept. 6-9
Harrison.....Cadiz.....Aug. 30-Sept. 2
Henry.....Napoleon.....Sept. 6-9
Hocking.....Logan.....Sept. 7-10
Holmes.....Millersburg...Sept. 27-30
Huron.....Norwalk.....Sept. 6-9
Jefferson.....Smithfield....Sept. 28-30
Lake.....Painesville Aug. 30-Sept. 2
Licking.....Newark.....Oct. 4-7
Logan.....Bellefontaine....Oct. 4-7
Lorain.....Elyria.....Sept. 27-30
Lucas.....Toledo.....Sept. 5-10
Madison.....London.....Sept. 6-9
Mahoning.....Youngstown....Sept. 5-9
Mahoning.....Canfield.....Sept. 27-29
Marion.....Marion.....Oct. 4-7
Medina.....Medina.....Sept. 6-8
Mercer.....Celina.....Aug. 23-26
Miami.....Troy.....Sept. 26-30
Monroe.....Woodsfield Aug. 30-Sept. 1
Montgomery.....Dayton.....Sept. 5-9
Morgan.....McConnelsville..Sept. 6-8
Morrow.....Mt. Gilead .....Oct. 4-7
Muskingum.....Zanesville Aug. 30-Sept. 2
Noble.....Caldwell.....Sept. 20-22
Ottawa.....Port Clinton. Sept. 14-16
Paulding.....Paulding.....Sept 6-9
Perry.....Somerset.....Sept. 28-30
Portage.....Ravenna.....Sept. 19-22
Preble.....Eaton.....Sept. 26-30
Putnam.....Ottawa.....Oct. 4-8
Richland.....Mansfield.....Sept. 27-30
Ross.....Chillicothe.....Aug. 9-12
Sandusky.....Fremont.....Sept. 27-30
Scioto.....Portsmouth.....Aug. 2-5
Seneca.....Fostoria..Aug. 30-Sept. 2
Shelby.....Sidney.....Sept. 20-23
Stark.....Canton.....Sept. 26-30
Summit.....Akron .....Oct. 7-9
Trumbull.....Warren.....Sept. 13-16
Tuscarawas.....Canal Dover..Sept. 20-23
Union.....Marysville....Sept. 20-23
Van Wert.....Van Wert Aug. 29-Sept. 2
Warren.....Lebanon..Aug. 30-Sept. 2
Washington.....Marietta.....Sept. 13-15
Wayne.....Wooster.....Oct. 4-6
Williams.....Bryan....Aug. 30-Sept. 2
Wood.....Bowling Green Sept. 27-Oct. 1
Wyandot.....Upper Sandusky Sept. 27-30

PENNSYLVANIA.

Allegheny.....Tarentum Aug. 30-Sept. 2
Armstrong.....Dayton.....Sept. 27-30
Armstrong.....Parker's Landing Sept. 20-23
Beaver.....Beaver.....Sept. 27-30
Beaver.....Hookstown....Aug. 17-19
Bedford.....Bedford.....Oct. 5-8
Berks.....Kutztown.....Oct. 4-7
Berks.....Reading .....Sept. 6-9
Blair.....Hollidaysburg Sept.13-16
Bradford.....Canton.....Sept. 7-10
Bradford.....Towanda.....Sept. 27-30
Bradford.....Troy.....Sept. 13-16
Butler.....Butler.....Sept. 6-9
Cambria.....Carrolltown...Sept. 27-30
Cambria.....Ebensburgh...Sept. 20-23
Carbon.....Leighton.....Oct. 4-7
Centre.....Centre.....Sept. 12-17
Centre.....“Grange Park” Centre Hall...Sept. 12-17
Chester.....Oxford.....Sept. 28-30
Chester.....West Chester...Sept. 1-3
Clarion.....Clarion.....Sept. 13-16
Clearfield.....Williams Grove Aug. 29-Sept. 3
Columbia.....Berwick .....Sept. 7-10
Columbia.....Bloomsburg....Oct. 12-15
Crawford.....Cambridgeboro Sept. 20-23
Crawford.....Cochranton....Sept. 7-9
Crawford.....Conneautville Sept. 13-16
Crawford.....Titusville.....Sept. 6-9
Cumberland.....Carlisle.....Sept. 27-30
Dauphin.....Gratz.....Sept. 20-23
DeKalb.....Waterloo.....Oct. 3-7
Erie.....Corry .....Sept. 13-16
Erie.....Edinboro.....Sept. 27-30
Erie.....Wattsburg.....Sept. 6-9
Fayette.....Uniontown ....Sept. 13 16
Fulton.....McConnellsburg Dec. 1-2
Greene.....Carmichaels .....Oct. 6-7
Indiana.....Indiana.....Oct. 3-7
Jefferson.....Brookville... Sept. 20-23
Juniata.....Port Royal....Sept. 21-23
Lackawanna....Scranton.....Sept. 5-10
Lawrence.....New Castle....Aug. 23-26
Lehigh.....Allentown....Sept. 26-30
Luzerne.....Dallas.....Sept. 28-Oct. 1
Lycoming.....Hughesville.....Oct. 6-9
McKean.....Port Allegany Sept. 14-16
Mercer.....Mercer.....Sept. 13-15
Mercer.....Stoneboro....Sept. 27-30
Monroe.....Stroudsburg..Sept. 20-24
Montgomery.....Pottstown....Sept. 13-16
Montour.....Danville.....Oct. 4-7
Northampton....Nazareth.....Oct. 4-7
Northampton....Bethlehem ....Sept. 20-24
Northumberland..Milton.....Sept. 27-30
Northumberland..Shamokin.....Sept. 20-23
Perry.....Newport.....Sept. 13-16
Potter.....Coudersport ...Sept. 6-9
Schuylkill.....Lavelle.....Sept. 13-16
Schuylkill.....Orwigsburg.....Sept. 6-9
Schuylkill.....Ringtown.....Aug. 26-28
Sullivan.....Forksville .....Oct. 4-6
Susquehanna....Harford..... ..Sept. 20-22
Susquehanna.....Montrose....Sept. 27-28
Tioga.....Mansfield.....Sept. 27-30
Union.....Lewisburg.....Oct. 5-7
Warren.....Warren .....Sept. 13-16
Washington.....Burgettstown....Oct. 4-6
Washington.....Washington Aug. 29-Sept. 2
Wayne.....Honesdale.....Sept. 27-29
Westmoreland....Greensburg Sept. 26-Oct. 1
Wyoming.....Tunkhannock Sept. 14-16
York.....Hanover ....Sept. 13-16
York.....York.....Oct. 4-7

RHODE ISLAND.

Providence.....Woonsocket....Sept. 6-8
Washington.....West Kingston Sept. 13-15

SOUTH CAROLINA.

Fairfield.....Winnsboro.....Oct. 27-28
Richland.....Columbia.....Nov. 15

SOUTH DAKOTA.

Campbell.....Mound City Sept. 29-Oct. 1
Clay.....Vermillion....Sept. 26-30
Deuel.....Gary.....Sept. 21-23
Minnehaha.....Sioux Falls...Sept. 12-16
Union.....Elk Point.Sept. 28-Oct. 1

SOUTHERN SOUTH DAKOTA DISTRICT.

Bon Homme.....Scotland.....Sept. 6-9

TENNESSEE.

Anderson.....Clinton .....Sept. 6-9
DeKalb.....Alexandria....Sept. 22-24
Dyer.....Dyersburg ....Oct. 11-15
Fayette.....Somerville....Sept. 28-30
Gibson.....Trenton.....Oct. 11
Giles.....Pulaski.....Sept. 27-30
Henry.....Paris .....Sept. 14-17
Lincoln.....Fayetteville...Oct. 11-15
London.....London .....Sept. 20-23
Madison.....Jackson.....Oct. 18-22
Marshall.....Lewisburg.....Oct. 4-8
Maury.....Columbia.....Sept. 20-24
Overton.....Livingston.....Oct. 6-8
Rutherford.....Murfreesboro Sept. 13-17
Shelby.....Memphis.....Oct. 8-15

TEXAS.

Brown.....Brownwood Sept. 26-Oct. 1
Comanche.....Comanche ....Sept. 20-24
McLennan.....McGregor.....Oct. 6-13
Tom Green.....San Angelo.....Oct. 4-8

UTAH.

Juab.....Nephi.....Oct. 1

VERMONT.

Bennington.....Manchester.....Oct. 4-6
Caledonia.....St. Johnsbury Sept. 13-15
Franklin.....Sheldon Junction Sept. 7-9
Washington.....Waitsfield Aug. 31-Sept. 1
Windham.....Brattleboro...Sept. 28-29
Windsor.....Woodstock....Sept. 27-29
Rutland.....Rutland.....Sept. 13-15
Rutland.....Fair Haven...Sept. 27-30

VIRGINIA.

Augusta.....Staunton.....Aug. 23-26
Botetourt.....Fincastle.....Oct.4-7
Campbell.....Lynchburg....Oct. 25-28
Frederick.....Winchester...Sept. 13-16
Henrico.....Richmond.....Oct. 6-26
Loudoun.....Leesburg.....Aug. 23-25
Northampton.....Cape Charles City Aug. 23-25
Northumberland..Heathsville.....Oct. 4-7
Shenandoah.....Woodstock.....Oct. 4-7
Spottsylvania.....Fredericksburg Aug. 30-Sept. 1
Tazewell.....Virginia.....Sept. 20-23

WASHINGTON.

Walla Walla.....Walla Walla Sept. 26-Oct. 1

WEST VIRGINIA.

Greenbrier.....Lewisburg Aug. 30-Sept.2
Harrison.....Clarksburg Aug. 30-Sept. 1
Jackson.....Jackson C. H....Sept. 5-8
Mason.....Point Pleasant Aug. 23-26
Ohio.....Wheeling.....Sept. 5-9
Ritchie.....Pennsboro....Sept. 13-15
Tyler.....Middlebourne Aug. 23-25
Wetzel.....New Martinsville Aug. 30-Sept. 2
Wood.....Parkersburg Aug. 30-Sept. 2

WISCONSIN.

Adams.....Friendship....Sept. 21-23
Barron.....Chetek.....Sept. 20-22
Brown.....Green Bay.....Sept. 6-9
Calumet.....Chilton .....Sept. 20-23
Columbia.....Portage.....Sept. 6-9
Dane.....Madison.....Sept. 5-9
Dodge.....Beaver Dam..Sept. 27-30
Door.....Sturgeon Bay Sept. 28-Oct. 1
Fon du Lac.....Fon du Lac.....Sept. 6-9
Grant.....Bloomington....Sept. 7-9
Iowa.....Dodgeville.....Aug. 24-26
Jackson.....Black River Falls Sept. 6-9
Jefferson.....Jefferson.....Sept. 27-30
Juneau.....Manston.....Sept. 13-15
La Fayette.....Darlington ....Sept. 7-9
La Crosse.....La Crosse Aug. 29-Sept. 3
Manitowoc.....Manitowoc....Sept. 6-9
Ontagamie.....Hortonville....Sept. 7-9
Pepin.....Durand.....Sept. 7-9
Portage.....Amherst.....Sept. 20-22
Racine.....Racine .....Sept. 6-9
Rock.....Jonesville.....Sept. 6-9
Sheboygan.....Sheboygan ....Sept. 6-8
Vernon.....Viroqua.....Sept. 20-23
Walworth.....Elkhorn.....Sept. 20-23
Waukesha.....Waukesha....Aug. 23-26
Waupaca.....Weyanwega..Sept. 27-29
Winnebago.....Oshkosh.....Sept. 19-23

CANADA.

ONTARIO.

Addington.....Harrowsmith..Sept.21-22
Bruce.....Walkerton....Sept. 27-30
Carleton.....Ottawa....Sept. 22-Oct. 1
Frontenac.....Kingston.....Sept. 1-8
Gray.....Walters Falls..Sept. 27-28
Grenville.....Prescott.....Sept. 20-22
Haldimand.....Cayuga.....Oct. 4-5

Norfolk	Simcoe	Oct. 17-19
Ontario	Whitby	Sept. 20-22
Peel	Brampton	Sept. 27-28
Perth	Stratford	Sept. 29-30
Peterborough (East)	Norwood	Oct. 11-12
Peterborough (Central)	Peterborough	Sept. 27-29
Prince Edward	Picton	Sept. 21-22
Renfrew	Renfrew	Sept. 20-21
Stormont	Cornwall	Sept. 16-17
South Grenville	Prescott	Sept. 20-22
Waterloo	Berlin	Sept. 27-28
QUEBEC.		
Argenteuil	Lachute	Sept. 27-28
Compton	Cookshire	Sept. 13-14
Huntingdon	Havelock	Sept.6
Joliette	Joliette	Sept. 9-10
St. Johns	St. Johns	Sept. 6-8
PRINCE EDWARD ISLAND.		
Prince	Summerside	Sept. 21
Kings	Georgetown	Oct. 4-5
Queens	Charlottetown	Sept. 27-30

Walking Canes.

If you want to get a good outfit of

CANES AND RINGS

at cheapest manufacturers' prices, write for a price list. All goods delivered promptly, C. O. D. by express, on receipt of a deposit with order.

LARGE VARIETY OF CAMPAIGN CANES. Address

Schlichting & Rendsburg Mfg. Co.,
12 Vesey Street, New York.

The Cider Makers' Hand Book.

A Complete Guide for Making and Keeping Pure Cider.

By J. M. TROWBRIDGE.

Pure cider is one of the most healthful and pleasant beverages that man can use. It is the pure juice of the apple containing malic acid. Excellent as pure cider is, it is difficult to procure it either from wholesale or retail dealers. The stuff sold for pure cider is often some villainous concoction which ought to be prohibited by law; and most of the other cider sold is made either from bad apples or by incompetent persons, and therefore is either bad from the begining, or else is spoiled through the carelessness or ignorance of the maker. In a great country like ours, where apples are produced in such overwhelming abundance, good cider ought to be plentiful and cheap, and yet at the same time be remunerative to the makers. The Cider Makers' Hand Book is a complete guide for making and keeping pure cider, by a practical man of great experience in the business. It should be in the hands of all apple growers and dealers who handle large quantities of fruit. The book describes

Pasteurized & Unfermented Cider.

Mechanical intelligence has brought the necessary appliances for cider making to great perfection; yet we learn that three-fourths or more of all the cider made is spoiled in the process of making, a fact which is attributed to a general lack of information of the plain, practical and simple requirements to be observed in the making and keeping of cider, rather than to any other cause. To correct some of the erroneous theories now accepted by those engaged in Cider Making, and to be to others a

Hand Book of Practical Instruction,

Is the object of this most valuable work. No treatise on this art has been published in many years, and it will be welcomed by thousands as a Standard Authority of practical information, based on exact scientific facts.

Fully Illustrated.

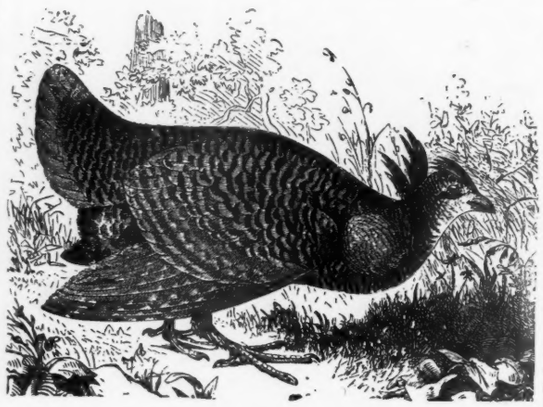
CLOTH, 12MO. PRICE, POSTPAID, $1.00.

SENT FREE. **New Edition of Illustrated Rural Book Catalogue,** containing 116 pages, and fully describing upwards of **600 valuable** works on **Agriculture, Horticulture, Architecture, Horses, Cattle, Game, etc.** Address

Orange Judd Co., 52 & 54 Lafayette Place, N. Y.

HOW TO HUNT AND TRAP.

Containing Full Instructions for Hunting Elk, Moose, Deer, Antelope, Bear, Fox, Grouse, Quail, Partridge, Ducks, Woodcock, Snipe, and all the other Game, Waterfowl, Etc. Also the Localities where Game Abounds.



INSTRUCTIONS ARE GIVEN ON

Steel Traps, How to Construct Home-made Traps, and How to Trap all Kinds of Wild Animals, Game, Etc.

By JOSEPH H. BATTY,

Taxidermist of U. S. Surveys; Author of "Practical Taxidermy and Home Decoration."

80 ILLUSTRATIONS.

This work is one of the most complete, popular, and standard works of its kind. We offer it as the companion book to the author's standard work, "Practical Taxidermy and Home Decoration."

Cloth, 12mo. Price, Postpaid, $1.50.

PRACTICAL TAXIDERMY

AND HOME DECORATION,

TOGETHER WITH GENERAL INFORMATION FOR SPORTSMEN.

By JOSEPH H. BATTY,

Taxidermist for the Hayden Expedition and other Government Surveys, and many of the leading Colleges and Museums in the United States. Author of "How to Hunt and Trap."

125 ILLUSTRATIONS.

JOSEPH H. BATTY, the author of this volume, has devoted sixteen years of active life to the work of collecting and preserving animals, birds, fishes, etc. He was the Official Taxidermist of the Northern Boundary Survey, and also of the United States Geological Survey, under Dr. Hayden, generally known as the Hayden Expedition. Mr. Batty has, likewise, been Taxidermist for several of our leading Universities, Colleges, Museums and Public Parks.

Cloth, 12mo. Price, Post-paid, $1.50.

BROOM-CORN AND BROOMS.

A Treatise on Raising Broom-Corn and Making Brooms on a Small or Large Scale.

Written and Compiled by the Editors of the American Agriculturist.

CONTENTS.

Introduction. Broom-Corn and its varieties. Description of the Plant. Introduction and extent of Culture. Secondary Products, Seed, Fodder and Stalks. Cultivation, the Land. Rotation. Manure. Hills or Drills. Quantity of Seed to the Acre. Time of Planting. Cultivating. Implements. Thinning. Time for Harvesting. Harvesting Dwarf Corn. Lopping, Bending, or Breaking. Crooked Brush. Tabling. Cutting. Preparing for Market. Curing the Brush. Scraping or Removal of the Seed. Assorting the Brush. Drying or Curing House. Racks for Drying. Curing. Curing and Handling the Crop on a Large Scale. Baling. The Press. Marketing. Commissions and Charges. Profits of the Crop. General Conclusions. Growing on the Large Scale. What a Retired Grower Says. Making Brooms. Home-made Brooms. Home-made Brooms, another Method. Making Brooms by Machinery. Extent of the Manufacture.

Cloth, 12mo. Price, Postpaid, 50 cents.

SENT FREE. **New Edition of Illustrated Rural Book Catalogue,** containing 116 pages, and fully describing upwards of **600 valuable** works on **Agriculture, Horticulture, Architecture, Horses, Cattle, Game, etc.** Address

ORANGE JUDD CO., 52 & 54 Lafayette Place, N. Y.

Gambling in Food Products.

The fate of the anti-option bill is not yet decided. The Senate of the United States finally postponed its consideration to the December session, after discussing the measure for several days. It was the intention of the opposition to talk it to death, or to prevent a vote until the House was ready to adjourn, when it might have been killed in the closing hours of the session. The friends of the measure thought it wise, therefore, to let the bill go over until the winter session, when it is to come up as unfinished business. This will give the anti-option bill the right of way ahead of all business except routine matters until a vote is finally taken.

The opposition are confident of killing the measure at that time, and are loud in claiming that the delay will work a revolution in public sentiment regarding it. The advocates of the bill believe that the longer it is before the public the stronger will its support become, especially as they have in hand amendments to remove certain features of the measure that might prove ambiguous or dangerous. The real object of the anti-option bill is to tax out of existence the bucket-shop gambling, which is already under the ban of every legitimate board of trade and produce exchange. But the ban is not enforced. If it is necessary to amend the bill to carry out this object without infringing on the right of free contract for goods for actual delivery, it will be done. No advocate of the anti-option bill desires to interfere with honest and legitimate commerce, but they are all a unit in their desire to stamp out the gambling pure and simple.

The Most Valuable Magazine.—The AMERICAN AGRICULTURIST is the most valuable magazine for information, instruction and sound advice. May your prosperity increase.
PHILIP M. BRUSHER, Routt Co., Col.

From a Life Member.—Look upon me as a life member of the AMERICAN AGRICULTURIST family, as I do not wish to sever my connection with the best agricultural paper in the world so long as I live. REV. JOHN MORRISON, Ontario, Can.

SMOKED FOR OVER TWENTY-FIVE YEARS.

Blackwell's Bull Durham Smoking Tobacco

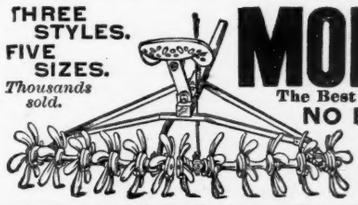
Has been popular with smokers everywhere for over twenty-five years.

It is Just as Good Now as Ever.

Its FLAVOR, FRAGRANCE and PURITY have contributed largely to the growing popularity which pipe smoking enjoys. Pipe smoking is growing in favor because finer, sweeter and better tobacco can be had in this form and at much less cost than in cigars.

BLACKWELL'S DURHAM TOBACCO CO.,
DURHAM, N. C.

THREE STYLES. FIVE SIZES. *Thousands sold.*



MORGAN Spading Harrow

The Best all around Rotary Harrow and Pulverizer. NO EQUAL for Fall plowed land, Stubble, Vineyards and Peach Orchards. Leaves no furrow or ridge. Angle of teeth adjustable. Send for Catalogue. **Mention this Paper.** Address

D. S. MORGAN & CO. Brockport, N.Y.

NOW IS THE TIME TO SOW

HENDERSON'S SPECIAL GRASS MIXTURES

FOR HAY OR PERMANENT PASTURE.

These mixtures will give a pasture that will stand without renewal for 20 years. Thousands of acres are now sown with them annually. Fall sowings are most successful.

HENDERSON'S **Progressive Farmers' Manual,** offering the most complete list of **Grasses, Fodder Plants, Cereals and Root Crops,** mailed free on application.

PETER HENDERSON & CO. 35 & 37 Cortlandt St., **New York**

TREES, SHRUBS, ROSES, BULBS.

We offer for the Coming Season one of the finest stocks we have ever grown; handsome blocks of Standard and Dwarf Pear, Plum, Peach, Quince, Grape Vines, Carolina Poplars, Kilmarnock Willows, Etc.

Every Nurseryman, Dealer and Planter should send for our FREE CATALOGUE AND PRICE LIST.

38th YEAR—900 ACRES—28 GREENHOUSES.

The STORRS & HARRISON CO., Painesville, Lake Co., Ohio.

Crimson or German Clover.

(*Also called Scarlet Clover.*)

A more valuable crop than this does not exist. As an improver of the soil, or for an early summer forage or hay crop it is unsurpassed. As a green manuring crop for GRAIN, COTTON or TRUCKING CROPS, it gives the very best results; while for improving poor land it has no equal. First introduced in Virginia fifteen years ago, since which time its growth has rapidly extended until now it is largely grown in nearly every State in the Union.

Circulars giving full information free. Price of New Crop Seed, $6. per bushel of 60 lbs.

T. W. Wood & Sons,
Seedsmen, Richmond, Va.

Fall Circular giving full information on all Seeds for Fall sowing, ready August 15th. Mailed free. Send for it.

"A TREASURE AND A WONDER IN THE HORTICULTURAL WORLD."

Splendid! Delicious! Excellent! are the exclamations from those who have fruited and tested the Green Mountain, the earliest and best of all grapes. Ripens in August, yet of most delicate texture and exquisite flavor. Be not misled into buying this grape under other names. Every genuine vine is sealed with our trade-mark seal, as above. Send for circular giving full information. Vines can be shipped now if desired. Price, 2 or 3 year vines, $1 each by mail. Address

STEPHEN HOYT'S SONS, NEW CANAAN, CT.

HEADQUARTERS —FOR THE—

LINCOLN CORELESS PEAR!

THE LATEST and BEST.

Send for Catalogue.

J. S. COLLINS & SON, Moorestown, N. J.

FRUITS.

401 VARIETIES of BEST SORTS of Apple, Peach, Cherry, Pear, Plum, Quince, Strawberry, Raspberry, Blackberry, Grape, Currant, Gooseberry, etc. Also Chestnuts, Walnuts, Trifoliate Orange, Eleagnus Longipes and other NOVELTIES.

BERRIES!

THE CROPS OF THE YEAR.

Cotton Will be Short.

The August Report of the Statistician of the United States Department of Agriculture shows a reduction in the condition of cotton during July, from 86.9 to 82.3. This is the lowest average since August, 1886, when the general condition was one point lower. The season has been almost everywhere too wet, though in South Carolina and Georgia alternations of excessive rainfall and blistering sunshine have been injurious. In Texas need of rain is reported by some correspondents. The natural result of these conditions appears in grassy fields, rank plant growth and small fruitage with considerable shedding. Grass worms and caterpillars have appeared in the more southern and western districts, but no material damage has yet resulted.

The State Averages of Condition make possible the following comparison of percentage condition, to which is added, in the first column, the AMERICAN AGRICULTURIST estimate of acreage in cotton this year:

	Acres in 1892.	1892. *Aug.*	1891. *Aug.*	1891. *Sept.*
Virginia		83	81	78
North Carolina	932,000	82	75	79
South Carolina	1,709,000	83	83	81
Georgia	2,973,000	84	86	82
Florida	190,000	81	94	88
Alabama	2,445,000	83	89	83
Mississippi	2,669,000	80	93	83
Louisiana	997,000	83	90	85
Texas	2,754,000	86	92	82
Arkansas	1,373,000	75	95	86
Tennessee	637,000	79	82	84
United States	16,679,000	82.3	88.9	87.4

The Total Crop cannot exceed 7,500,000 bales, even if the weather is most propitious from August 1st, while bad weather would reduce the yield. Our estimate of acreage has been assaulted as much below the facts, but our own and other's investigations in July and August indicate that cotton will be harvested on between 16½ and 17 million acres. Add the 500,000 bales increase in the United States supply of cotton in sight on August 13th over the like date of last year, and we have 8,000,000 bales as an outside estimate of the available supply of American cotton during the new trade year to begin September 1st. The domestic demand for cotton was never better, and cotton manufacturing in the United States was never so prosperous. On the other hand, the industry in England is extraordinarily depressed, owing to previous overproduction and heavy shipments of cotton goods to the far East, paid for in the now fluctuating Indian silver. Hence, England is buying less American cotton for future delivery than last year, but she took from the United States more actual cotton in July than in that month last year, making her imports of American cotton for the eleven months ended August 1st quite as much as during the previous year. The situation in England has been growing worse meanwhile, until now the only change possible is for the better. Indian exports are falling off, while the new crop, now being harvested in India, is seriously reduced. Egyptian exports have but slightly increased, and the new crop is no larger than last year's.

The New York market for middling upland closed on August 13th at seven and one-fourth cents per pound, against eight cents at the same date last year, and twelve cents on August 12, 1890. There are many who believe that the 1892 crop will range between eight and ten cents, and average above nine cents in New York.

The Great Cereal Staples.

Spring Wheat prospects declined somewhat during July, the condition on August 1st for the whole United States averaging 87.3, against 90.9 on July 1st, according to the United States Department of Agriculture. The reduction was from 90 to 86 in Wisconsin, 92 to 87 in Minnesota, and 90 to 85 in North Dakota. There has been a slight advance in South Dakota and Nebraska, with no change in Iowa. In the Mountain States condition is generally high. In Washington a decline is reported from 90 to 78, as a result of blighting heat, and in Oregon from 91 to 76.

Winter Wheat is Threshing out better than was expected, in some sections. The enormous spring wheat crop of Kansas and Nebraska will also swell the total supply. The lowest estimate from a respectable source is the 480,000,000 bushels named by the New York *Sun* (C. Wood Davis); next comes Bradstreet's, with 515,000,000 bushels. Forty days earlier we wrote that "July 1st indications point to a total crop of 550,000,000 bushels." The drouth during July has certainly done considerable damage, but to what extent this will be made up must depend upon August weather, and only September returns can afford a sound basis for modifying our July figures.

Wheat in Foreign Countries.—Russia's crop is somewhat better than last year, but how much better is a matter of guesswork, in the absence of any reliable public or private agency for getting at the facts. France will produce about half as much as the United States, and still be 25 per cent. under her full production. England is fully one-third short, and our great competitor, India, has an outturn only about two-thirds as much as last year. Enough is known to indicate a foreign demand for more than 165,000,000 bushels of American wheat, and United States exports for the fiscal year ending June 30, 1893, will probably reach that vicinity. United States exports in July were 13,348,000 bushels, compared with 12,210,000 in July last year.

As to Corn, the returns of the Department of Agriculture show a slight improvement in condition, raising the monthly average from 81.1 in July, to 82.5 in August. In only four years since the initiation of crop reporting has there been a lower August condition. In the year of worst failure, 1881, it was 79, declining to 66 in October, when the crop made 1,195,000,000 bushels on 64,282,000 acres. In 1890 it was 73.3, declining to 70.6 in October, making 1,490,000,000 bushels on 72,000,000 acres. In August, 1886, it was 80.7, and in 1887 it was 80.5, declining later only in the latter year. In August, last year, condition was 01, and the yield 2,060,000,000 bushels on 769,204,000 acres. A slight improvement is indicated in the States north of the Ohio river, and a greater advance in the States west of the Mississippi river, except Kansas and Nebraska. Condition is high in nearly all the Southern States, nearly the same as in July in the breadth west of the Mississippi, higher in the lower States of the Atlantic Coast, and slightly lower in Alabama and Mississippi. A small decline is seen in the Middle States, except New York, and also in the Eastern States, though in both of these divisions the average is higher than in the West. The following averages of principal States are given: New York, 90; Pennsylvania, 86; Virginia, 90; Georgia, 97; Texas, 94; Tennessee, 92; Ohio, 81; Indiana, 74; Illinois, 73; Iowa, 79; Missouri, 83; Kansas, 81; Nebraska, 80. Most correspondents indicate a present tendency to further improvement, but frost must hold off and the weather be very favorable from August 20th to September 25th, to make a crop much exceeding the average of the previous twelve years—1,715,000,000 bushels.

Buckwheat was grown on 1.3 per cent. more acres this year than last, but condition is only 93 or 4.3 points poorer than in August of 1891. A fair crop is assured, but nothing more. Prices should, therefore, rule steady at the usual range, as there is nothing in the situation at present to cause any material departure from the standard value of this grain.

Barley Prospects were modified by an unfavorable July, and August condition was 91 against 94 last year. The increase in acreage will make the total yield as large as last year. The enlarged home demand and partial exclusion of Canadian barley should compensate for the probable falling off in exports to Europe, and maintain prices close to the range of the past season.

The Condition of Spring Rye in August averaged 89.8 per cent., or just about the same as one year ago, and a fall of three points during July. Winter rye was in nearly as good condition when harvested as it was last year. In the absence of an abnormal shortage in the European rye crop, it is not likely that exports will be as heavy or prices as high as last year; yet with the falling off in other cereals, the market for rye should hold steady at values above the average of years prior to 1891. July exports were only 162,000 against 236,000 bushels in July, 1891.

The Prospect for Prices of Cereals is excellent. Oats are threshing out even less than was anticipated from the July report, and will be 100,000,000 bushels less than last year, when the final figures were 738,000,000 bushels. Farmers will feed corn in place of oats, which will help the market for both crops. Corn will be 250 to 300 million bushels less than last year, and wheat 60 to 100 million bushels. The total product of these three cereals will be from 400 to 500 million bushels less than last year. We exported during the fiscal year, mostly of the '92 growths, 225 million bushels of wheat, 77 of corn and 11 of oats, or total exports of 313 million bushels of wheat, corn and oats. If our exports are only half as heavy for the coming year as during the past season, the domestic shortage in production is more than enough to warrant a higher range of prices for the crops of 1892 than the values of the past year. Whether higher prices will prevail, depends upon the extent to which the laws of supply and demand are allowed to operate the grain markets of the world.

Root Crops and Vegetables.

The Potato Crop, previously injured by the extremely wet spring and early summer, was further reduced by the July drouth, and its condition August 1st for the whole country was only 86.8, declining from 90 in July, according to the Department of Agriculture. Our own reports are somewhat conflicting from the principal potato growing regions of the New England, Middle and Western States, though a serious shortage is assured. The reduction in acreage from last year will be supplemented by a reduction in yield, which cannot average over 75 bushels per acre, taking the United States as a whole. This would indicate a crop of about 175 million bushels, or over 50 millions less than was produced last year. The corresponding improvement in market prices would seem to be assured. Should blight strike the crop on an extended scale during August, the outturn for 1892 may be one of the smallest ever secured. Sweet potatoes have not shared in this decline, and promise quite a full crop, and with the shortage in Irish potatoes, sweets must command a good price. The immense potato shipping region of the Aroostook, Northern Maine, has suffered for want of rain and from heat and beetles. The same is true of the commercial potato fields of Southern New England, much of New York and Pennsylvania and throughout New Jersey, though the extent of the injury does not fully appear in department returns. Ohio has a fair to light crop, with some rot. Further North and West the crop is later, insects having been worse than in recent years, and rot is becoming serious in Wisconsin. The inter-Mountain States and the Pacific coast promise a full yield. On the basis of 100 representing a good stand and every prospect of a full crop on August 1st, the returns for the principal potato States thus compare:

	1892	'91	'90	'89
Maine	88	100	92	96
New Hampshire	83	100	94	98
Vermont	88	100	93	92
Massachusetts	80	99	85	91
New York	93	98	95	90
Pennsylvania	83	97	90	94
New Jersey	78	91	98	89
Ohio	85	99	56	99
Michigan	84	94	75	99
Indiana	80	87	50	98
Illinois	85	92	39	100
Minnesota	90	97	87	85
Wisconsin	88	96	80	99
Iowa	86	100	75	101
United States	86	96	77	94
Yield per acre	75	94	57	76
Crop (millions bu.)	165	235	124	190

Onions will be a short crop at best. Special reports to the *New England Homestead* (Springfield, Mass.) emphasize the serious and widespread injury to onions throughout the onion plantations of Ohio, Kentucky, Illinois and Michigan, where alternate flood and drouth, with blasting heat, have played havoc with the crop. The yield all through this section will be one-third to one-half less than last year, and the crop is of inferior quality. It will have to be marketed early, if at all, as but a small proportion is sound. This means that the early markets, at least in the Central and Western States, will be glutted with soft, spongy, inferior onions at unsettled and probably low prices. In New York, New Jersey and New England the crop is better in quality than at the West, though much under last year in yield. Therefore, Eastern markets should not be so glutted or unsteady this fall, as is likely to be the case West. But the late market is quite certain to be very satisfactory, and *The Homestead* for August 25th concludes from its elaborate report

[*Continued on Page* 572.]

HOUSEHOLD ARTICLES.

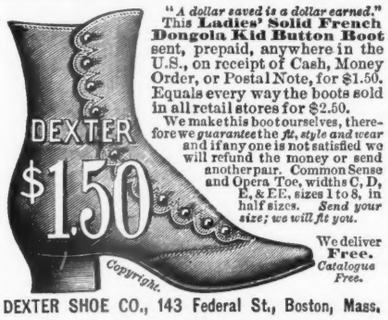
BEST POLISH IN THE WORLD.

RISING SUN STOVE POLISH

DO NOT BE DECEIVED with Pastes, Enamels, and Paints which stain the hands, injure the iron, and burn off. The Rising Sun Stove Polish is Brilliant, Odorless, Durable, and the consumer pays for no tin or glass package with every purchase.

HAS AN ANNUAL SALE OF 3,000 TONS.

BEWARE OF IMITATIONS OF OUR "AD."



"A dollar saved is a dollar earned." This **Ladies' Solid French Dongola Kid Button Boot** sent, prepaid, anywhere in the U.S., on receipt of Cash, Money Order, or Postal Note, for $1.50. Equals every way the boots sold in all retail stores for $2.50.

We make this boot ourselves, therefore we *guarantee* the *fit, style and wear* and if any one is not satisfied we will refund the money or send another pair. Common Sense and Opera Toe, widths C, D, E, & EE, sizes 1 to 8, in half sizes. *Send your size; we will fit you.*

We deliver **Free.** *Catalogue Free.*

DEXTER SHOE CO., 143 Federal St., Boston, Mass.

Wall Paper.

Samples and book *'How to Paper'* sent **Free.** White Blanks 3½c. New Golds - - 9c. Embos'd Golds 15c.

Painters and Paper Hangers send business card for our large Sample Books by express.

KAYSER & ALLMAN, 410-418 Arch St., Philadelphia, Penna.

BOILING WATER OR MILK.

EPPS'S

GRATEFUL—COMFORTING.

COCOA

LABELLED 1-2 LB. TINS ONLY.

10 DAYS FREE TRIAL in your own home. First class Sewing Machines shipped anywhere to anyone at wholesale prices. All latest improvements. Warranted five years. Complete set of attachments **FREE.** Send for catalogue

Standard Singer Machines, $9.50 to $15.50
$50 Arlington Sewing Machine for $19.50
$60 Kenwood Sewing Machine for $23.50

CASH BUYERS' UNION, 160 W. Van Buren St. B 55 Chicago.

FREE **For 30 Days.** Wishing to introduce our **CRAYON PORTRAITS** and at the same time extend our business and make new customers, we have decided to make this **Special Offer:** Send us a Cabinet Picture, Photograph, Tintype, Ambrotype or Daguerotype of yourself or any member of your family, living or dead and we will make you a CRAYON PORTRAIT FREE OF CHARGE, provided you exhibit it to your friends as a sample of our work, and use your influence in securing us future orders. Place name and address on back of picture and it will be returned in perfect order. We make any change in picture you wish, not interfering with the likeness. Refer to any bank in Chicago. Address all mail to **THE CRESCENT CRAYON CO.** Opposite New German Theatre, CHICAGO, ILL. P. S.—We will forfeit $100 to anyone sending us photo and not receiving crayon picture **FREE** as per this offer. This offer is bonafide.

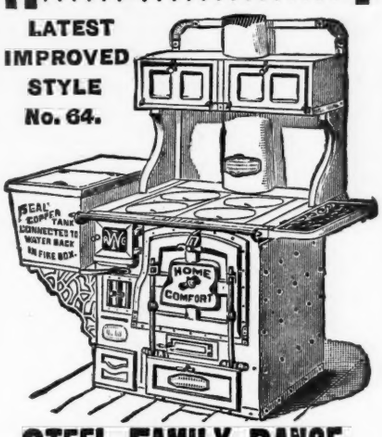
Famous Faces. A collection of rare beauty and value,—fine engraved portraits of Phillips Brooks, Lady Henry Somerset, Tolstoi, "Pansy," and many others.

The **HOUSEKEEPER'S WEEKLY PORTRAIT ALBUM** is a gem,—the result of years of labor, and *cannot be bought anywhere.* Plates bound with silk in fine embossed cover. Given FREE until September with every new subscription to Housekeeper's Weekly, at regular price, **$1.00**

MARION HARLAND'S "Home Talks" each week. The only household WEEKLY. It gives you a new sensation. Address **HOUSEKEEPER'S WEEKLY, Philadelphia, Pa.**

HOME COMFORT

LATEST IMPROVED STYLE No. 64.



STEEL FAMILY RANGE.

Made almost WHOLLY of MALLEABLE IRON and WROUGHT STEEL.

OVER 230,000 NOW IN ACTUAL USE.

This Range is SOLD ONLY BY OUR TRAVELING SALESMAN from our own wagons throughout the country.

WROUGHT IRON RANGE CO.,
Sole Manufacturers. ST. LOUIS, MO.
Established 1864. Paid up Capital $500,000.
Write for Cook Book—issued free.

U. S. S. SCALES.

Portable Wagon or Stock

If you want Iron Lever **SCALES**

Write for our prices. You can save from 30 to 50 per cent. by ordering *direct from us.*

BINGHAMTON SCALE WORKS, BINGHAMTON, N. Y.

Buy Your **WALL PAPER** By Mail

AT WHOLESALE PRICES

Handsome New Designs, 3c a roll.
Beautiful Gilt Papers, 5c a roll.
Elegant Embossed Gilt Papers, 8c a roll.
4 to 9 inch Borders, Without Gilt, 1c a yard.
4 to 18 Inch Borders, With Gilt, 2c and 3c a yard.
Send 8c to pay postage on over 100 samples.
Address F. H. CADY, 305 High St., Providence, R. I.

TERRY'S BUSHEL BOXES. T. B. TERRY **beats the world** raising Potatoes. One element of his success is in handling them in bushel boxes. These boxes are used also for other crops, such as cucumbers, tomatoes, melons, &c. We make them in 3 styles, at 10c. and up. Send for pamphlet **—Handling Farm Produce—** given free to those who mention this paper. If interested, ask also for our Catalogue of Bee Supplies, and a sample copy of **Gleanings in Bee Culture.** A. I. ROOT, Box A, Medina, Ohio.

MADE OF TIN

DO YOU KNOW THAT THE PERFECTION **FLOUR BIN AND SIEVE**

Combines Sack or Barrel. Sifter, Pan and Scoop. Preserves flour from mould and mustiness. Keeps out dust, vermin, etc.

YOU OUGHT TO HAVE ONE

Ask our agent or your dealer for them, if they cannot supply you, write to us.

Prices, to hold { 25 pounds, $2.50 / 50 pounds, $3.00 / 100 pounds, $4.00

Satisfaction Guaranteed.

AGENTS WANTED.

SHERMAN & BUTLER, 26-28 W. Lake St. B 143 CHICAGO, ILL.

GOLD MEDAL, PARIS, 1878.

W. BAKER & CO.'S Breakfast Cocoa

from which the excess of oil has been removed,

Is absolutely pure and it is soluble.

No Chemicals are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere

W. BAKER & CO., Dorchester, Mass.

THE SOCIETY OF S. MARTHA,

FOR THE PROTECTION AND TRAINING OF CHILDREN AND YOUNG GIRLS.

34 West 22d Street, New York.

Reception hours from 3 to 4 daily, except Sunday. Ordes for embroidery and fine hand sewing solicited.

PAINT YOUR ROOFS WITH **DIXON'S SILICA GRAPHITE PAINT**

Water will run from it pure and clean. It covers double the surface of any other paint, and will *last four or five times longer.* Equally useful for any iron work. Send for circulars. JOS. DIXON CRUCIBLE CO., Jersey City, N. J.

STUDY LAW AT HOME.

TAKE A COURSE IN THE SPRAGUE CORRESPONDENCE SCHOOL OF LAW. (Incorporated.)

Send ten cents (stamps) for particulars to

J. COTNER, JR., SEC'Y, DETROIT, MICH. 528 WHITNEY BLOCK.

WILLISS COLLEGE OF SHORTHAND.

SPRINGFIELD, OHIO.

The oldest and largest exclusively Shorthand College in the world. Patronage and reputation national. For 12 years the leading school of its kind in America. No Vacation. Both Sexes. Circulars free. Address F. W. WILLISS, Expert Stenographer, Pri—

The High Speed Family Knitter

Will knit a stocking heel and toe in ten minutes. Will knit everything required in the household from homespun or factory, wool or cotton yarns. The most practical knitter on the market. A child can operate it. Strong, Durable, Simple, Rapid. Satisfaction guaranteed or no pay. Agents wanted. For particulars and sample work, address,

J. E. GEARHART, Clearfield, Pa.

When writing to advertisers be sure to mention the AMERICAN AGRICULTURIST.

THE CROPS OF THE YEAR.

(*Continued from Page 570.*)

that no one will miss it by holding sound and firm onions for the higher prices that seem to be assured later on.

Vegetables have been everywhere unfavorably affected by midsummer heat. Winter squash will be a comparatively light supply and prices must prove better than last year. The same is particularly true of cabbage, while growers of cauliflower for the large markets complain of the unsatisfactory condition of this crop. Celery rust is advancing on the Eastern crop, and the Michigan celery plantations promise a light yield. There will be no overproduction of celery, and better prices than last year may be expected. Beets and parsnips are making a fair crop, but the indications are for a full yield of turnips. An exhaustive report on these vegetables in the *New England Homestead* for August 25th is the authority for this statement.

The Pack of Produce will be less this season than last year. Tomatoes are not yielding as heavily on the Maryland and Delaware peninsula, while the crop further South was much reduced. The same is true of cucumbers, the crop being best in the Northern states and on Long Island. Sweet corn will require a late yield to enable the Maine packing factories to put up a full product. Our information points to a greatly reduced supply of dried and canned berries and indicates a continuance of present good prices for these articles and for canned and dried peaches.

The Market for Fruits.

The Apple Prospect has improved but slightly since July. This is especially true of winter fruit, but summer and early fall varieties have not been helped, and command better prices in our larger markets than for several years. Later advices confirm the earlier reports of the serious shortage in the English and European apple crop, and an active foreign demand is looked for with heavy exports from the United States and Canada at fair prices. In States of largest production the condition of winter apples on August 1st for the past five years thus compare:

	1892	'91	'90	'89	'88
Maine	80	75	65	75	90
New Hampshire	82	75	77	66	93
Vermont	75	79	64	59	88
Massachusetts	66	70	40	66	100
New York	68	75	35	45	73
Pennsylvania	57	78	21	54	71
Ohio	35	55	20	58	88
Michigan	57	45	40	66	80
Missouri	46	75	60	93	89
Arkansas	65	83	56	77	93
California	86	95	78	91	90
United States	64	77.5	54	78	77
Exports (M. bbls)		1,043	170	425	1,005

Peaches are yielding even less than earlier reports indicated, owing to July's drouth and drop. Prices have ruled high, and late peaches will reach fancy figures. The surplus for canning was very small. The general average condition of peaches in the United States was 60 in August, compared to 80 in the same month last year. California's commercial orchards are yielding the best of any State, quality is above the average and good prices are being netted.

The Yield of Grapes will be very good this year. The condition of grapes on August 1st was, in Massachusetts 82 against 78 at the same date one year ago, Connecticut 95 vs. 90, New York 89 vs. 84, New Jersey 92 vs. 90, Pennsylvania 89 vs. 80, Ohio 72 vs. 47, Michigan 83 vs. 66, Indiana 88 vs. 79, Illinois 88 vs. 90, California 80 vs. 99, United States 87 vs. 87 last year. The improvement in the crop in the Eastern States over last year is quite marked, but the crop is poorer westward, and in California it will be late and very uneven in ripening. With systematic co-operation to prevent glutted markets, fair prices ought to be realized because of the shortage in other fruits.

Other Money Crops.

Dairy Produce has entered upon the present season very favorably. The price of butter has ruled higher than last year, and, notwithstanding the very good pasturage, the make appears to have been very quickly absorbed. The exports for the three months ending July 31st were 3,250,000 lbs. as compared with 4,780,000 lbs. during the corresponding period of last year, a decrease of 1,530,000 lbs. In cheese the exports were 35,400,000 lbs. as compared with 31,800,000 lbs. last year, an increase of 3,600,000 lbs. It is believed that the quantity of butter in cold storage is rather less than usual at this time of the year, and there is no indication of a reaction in prices, which have been steadily advancing for some time past. For cheese the outlook is even more encouraging, owing to a shortage in the English make. A large quantity of the early American output was bought up by Canadians, evidently for shipment abroad, but there has since been more disposition on the part of Americans to hold for themselves, the result being a slow and gradual improvement in values. For both butter and cheese the prospect is decidedly satisfactory for the remainder of the season.

The Market for Straw should be steady for the best grades. The growth of both oat and rye straw has not been as good as last year, and fine long straw will not be over plenty. As usual, there will be an abundance of short straw at low prices in Eastern markets.

The Outlook for Hops.—The harvesting of the hop crop is well under way, and had, in fact, been completed in some sections by the beginning of this month. The outlook for prices is very decidedly in favor of the growers. The situation has been carefully watched by the *New York Homestead*, published at Syracuse, N. Y., which is the only paper that makes a specialty of hop news and statistics. The *Homestead's* complete census shows that the California crop will be about the same as last year, Oregon about 10 per cent. short, Washington at least 25 per cent. short, Wisconsin about the same, and New York State generally estimated at from 20 to 30 per cent. short. The English crop has suddenly been checked and damaged by inclement weather until the yield is placed at fully 20 per cent. short, while Germany's crop is but little better with a decrease in area of 4,000 acres. Stocks of last year's and 1891 hops in the hands of dealers and growers are lower than at any previous corresponding time in the history

(*Continued on Page 574.*)

A ROAD WAGON

$32.00

To introduce our goods, we will give **FREE**, one of these elegant Road wagons to any one who will sell Six (6) for us. Regular price is $65.00, we sell it for cash with order for **$32**. If you are looking for a bargain in **Vehicles** or **Harness** send for our **free** catalogue.

FOSTER BUGGY & CART CO., 16 Pike Bld. Cincinnati, O.

SAVE MONEY

$100 Top Buggy,	$55.00
$125 Top Phaeton,	$73.50
$75 Spring Wagon,	$44.00
$50 Road Wagon,	$29.00
$15 Road Cart. -	$9.00
$7.50 Single Harness.	$4.25
$25 Double Harness,	$14.50
$5 Morgan Tree Saddle	$2.25
$16.50 Texas Saddle,	$9.25

ALL GOODS FULLY WARRANTED and shipped anywhere to anyone at WHOLESALE prices with privilege of examination. Send at once for illustrated catalogue FREE. Address **CASH BUYER'S UNION, 158 W. Van Buren St. B 40, Chicago, Ill.**

3,000,000 Asparagus Roots. Largest stock in the U. S. four best kinds including Donald's Elmira. Write for wants to **I. & J. L. Leonard**, Iona, Gloucester Co., N. J.

The Decorah Steel Mill and Steel Tower

ARE BUILT TO LAST not one or two years but **A LIFE TIME.** Nothing but best material and workmanship. The

Decorah Steel Mill Has

1st—The **most powerful wheel.**
2d—The lifting movement which **wastes least power** by friction
3d—Best and **safest** wind mill **governor.**
4th—**Only four bearings requiring oil.**
5th—**Self-Oiling Reservoirs** for each bearing to carry **three months' supply of oil.**

N. B.—All good live farmers examine their mills at least 4 times a year, whether they have graphite or any other bearings, and everybody knows oil is safest.

6th—The only **absolutely positive Windmill Brake. No strain on Pull Out Wire when brake is applied**

We make 8-ft., 9-ft., 10-ft. and 12-ft. Pumping Mills. All mills can be mounted on Wooden Towers.

The Steel Tower

is the **heaviest** made (**40 ft. weighing 800 lbs.**) **Safest to climb. Has large sized Platform** and **strong Angle Steel Ladder,** is the only Tower in which the **braces** can be **drawn tight by Patent Staple Fastenings to make Tower firm and stiff.**

Decorah Windmill Co., Decorah, Iowa.

DO YOU WANT TO KEEP

YOUR CIDER SWEET?

USE **PRESERVIT**

ABSOLUTELY HARMLESS. NO TASTE, NO SMELL.

FOR SALE BY

OTTO HANN & BRO., 268 Water St., New York.

CLAREMONT Land Association, Claremont, Surry Co., Va.

Offers **600** choice farms; **3,000** handsome town lots on James River, with terms to suit purchaser. Free circular.

3 MONTHS FREE!

TO NEW SUBSCRIBERS

FOR 1893.

To every one not now on our list subscribing to the AMERICAN AGRICULTURIST during November and December, we will send the *October, November and December* numbers of this year *free*, dating the subscription to January, 1894, thus giving *fifteen months'* numbers for a *year's subscription.*

Bear in mind this special offer is *good only until Sept.* 31, 1892, and is made to *new subscribers only.*

Call the attention of your friends to our offer, and if possible *induce them to subscribe.*

Our agents will find this a great help in procuring new subscribers. *Commence your Winter campaign now..*

The American Agriculturist.

52 and 54 Lafayette Place, New York.

CHAMPION EVAPORATOR

For MAPLE, SORGHUM, CIDER, and FRUIT JELLIES.

Corrugated Pan over Firebox, doubling boiling capacity.

Small interchangeable syrup pans (connected by siphons) easily handled for cleansing and storing, and a **Perfect Automatic Regulator.** The **Champion** is as great an improvement over the Cook Pan as the latter was over the old iron kettle, hung on a fence rail. Catalogues *mailed free on application.*

THE G. H. GRIMM MFG. CO., Hudson, Ohio, and Rutland, Vt.

EVERY MAN HIS OWN CATTLE DOCTOR.

BY

GEORGE ARMATAGE, M. R. C. V. S.,

Formerly Lecturer on Materia Medica at the Albert Veterinary College, and Lecturer on Anatomy and Physiology at the Glasgow Veterinary College.

With Copious Notes, Recipes, etc.,

—AND—

UPWARDS

—OF—

Three Hundred and Fifty Practical Illustrations,

CONTAINING COLORED PLATES

Showing Forms of Disease and Treatment.

With the rapidly increasing importance of our live stock industry upon which so vast an amount of our national wealth depends, a knowledge of animal diseases and their treatment becomes more imperative with every succeeding year. To meet this want the author—than whom there is no more experienced and skillful veterinarian—has written this book. In its pages are clearly and concisely described the nature and causes of diseases, as well as the structure and functions of the animal body, a thorough understanding of which leads the way to a rational system of treatment and prevention.

With the aid of this book any intelligent farmer may acquire sufficient knowledge of animal diseases and the proper use of medicines to enable him to treat successfully all the various ailments of his cattle, sheep and swine.

While this book was primarily intended for the use of stock owners it is equally indispensable to the professional veterinarian. This work covers the entire range of veterinary science and practice pertaining to cattle, each chapter being so thorough, complete and exhaustive as to form in itself almost a monograph; while the many illustrations interspersed throughout the volume give it great additional value. This is without exception **the most valuable book** in existence for farmers and stockmen who are out of the reach of educated veterinarians. It is safe to assert that if a copy of this work could be placed in the hands of every live stock owner in the country, millions of dollars worth of live stock could be saved every year.

In the rapid strides which veterinary science has made, great improvements have taken place in the mode of treatment as well as in the estimate of disease. In this work the author's aim has been to describe all known diseases and to give the latest and best information, based upon the experience of the most celebrated practitioners, both as regards the prevention and the cure of every form of disease in all varieties and breeds of cattle.

All available material has been utilized, and we believe we can safely present this volume as **the best practical treatise** on the subject, and one that fully meets the requirements of the present day.

COMPLETE IN ONE LARGE OCTAVO VOLUME OF 894 PAGES.

Half Morocco. Price, Postpaid, $7.50.

HARRIS'S INSECTS INJURIOUS TO VEGETATION.

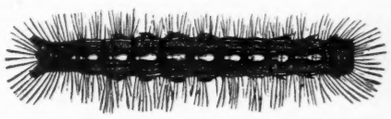
BY THE LATE THADDEUS WILLIAM HARRIS, M. D.

OCTAVO, 640 PAGES.

Enlarged and improved with additions from the author's manuscripts and original notes. Illustrated by engravings drawn from Nature under the supervision of Professor Agassiz. Edited by Charles L. Flint, late Secretary of the Massachusetts State Board of Agriculture. The work is fully illustrated with two hundred and seventy-eight fine wood cuts, and eight beautiful steel plates, full size, containing ninety-five figures.

APPENDIX.

By a resolution of the Legislature of Massachusetts, Mr. Flint was directed to issue a new edition of Dr. Harris's admirable Treatise on Insects Injurious to Vegetation, with suitable additions and illustrations, and was also authorized to use the plates prepared for the editions for the Commonwealth in the publication of one or more editions designed for wider circulation than that for the State could be expected to have.



It was thought best to insert the additions contemplated in the resolution in the foot-notes. No alterations have been made in the author's language, and the additional notes are inclosed in brackets, to distinguish them from those in former editions. Large additions have been made in the text, however, from the author's own manuscript; these will be found exclusively in the chapters upon the butterflies. Professor Agassiz very kindly supervised the original drawings, comparing them with the natural specimens before engraving. It is believed that very great scientific accuracy has thus been secured in the illustrations.

This work is the most popular one on entomology, and indeed, almost the only one not intended for the purely scientific student. The familiar descriptions of the insects are much aided by the beautiful illustrations. The work comprises those which are injurious to cultivated and wild plants, and is sufficiently systematic to give a general idea of the classification of insects. It takes a practical view of the matter, as well as a scientific one, and gives the means, as far as known, of combating these enemies of the cultivator. In concluding his preface to the second edition of this work, Dr. Harris wrote: "In the course of eight years, all the copies of the Report, and of the other impression, were entirely disposed of. Meanwhile some materials, for a new edition were collected, and these have been embodied in the present work. Believing that the aid of science tends greatly to improve the condition of any people engaged in agriculture and horticulture, and that these pursuits form the basis of our prosperity, and are the safeguards of our liberty and independence, I have felt it to be my duty, in treating of the subject assigned to me, to make it useful, and acceptable, to those persons whose honorable employment is the cultivation of the soil."

Price Postpaid, Plain Edition, $4.00
Price Postpaid, Colored Plates, 6.50

Sent postpaid to all parts of the World with the exception of South Africa for which must be added one shilling for each four shillings' worth of Books.

SENT FREE. Address **New Edition of Illustrated Rural Book Catalogue,** containing 116 pages, and fully describing upwards of **600 valuable** works on **Agriculture, Horticulture, Architecture, Horses, Cattle, Game, etc.**

ORANGE JUDD CO., 52 & 54 Lafayette Place, New York.

THE CROPS OF THE YEAR.

(*Continued from Page 572.*)

of the trade. The demand is always increasing and the outlook now is for a very firm market throughout the new trade year, with good prices. The supply of hop extract has been reduced to a minimum, and as the quality of the New York State hops is reported to be excellent, the growers there feel correspondingly jubilant over the prospect.

Cattle Foods will probably be higher in price than last year. Cotton-seed meal may possibly prove an exception, but the reduction in area and yield of cotton this year and the difficulty of keeping over any great amount of the old crop make the prospects doubtful for a continuance of the recent extraordinary low price of this valuable feed and fertilizer. Linseed meal is firm at quite high prices compared to other feeds, but the new crop is much below that of last year, and current values should be fully maintained. Wheat bran and shorts are likely to advance beyond last year's quotations, owing to the decreased wheat crop and the increased Western consumption. Corn meal must certainly cost more than it did last year, and the same is true of the various glucose feeds made from corn that are becoming so popular among Eastern milk producers. It is significant that Eastern dealers in feeds are heavy buyers at present prices for future delivery. Cannot farmers who have the money or credit afford to imitate their example?

The First Crop of Hay has proved to be a fair one throughout the United States and Canada, especially in those sections which have a surplus for shipment. The second, or rowen crop, of timothy and clover will be comparatively short, on account of the July drouth. The indications point to a total supply for market of about the same as last year, and with a corresponding satisfactory range and upward tendency of prices. The market for new hay will open at higher values than was the case last year. Maine's hay crop is the smallest for three years, but of high quality; New Hampshire fair, quality fine; Vermont above the average; Massachusetts short, quality good; New York fair, quality fine; Arkansas, big yield secured in fine condition; Tennessee, damaged by wet; Ohio, not heavy, but timothy of good quality: Michigan, fair crop but much injured by rain; Indiana, yield large, quality high; Illinois ditto; Wisconsin and Minnesota, large crop but considerably injured in curing; Iowa, fine; Missouri, heavy yield but quality light.

The Peanut Crop was grown on one-tenth less acres in Virginia than last year, which in a good year, produces 3,500,000 bushels, but North Carolina increased its acreage somewhat, owing to the low prices of cotton. There was a falling off in the area planted in Tennessee. In all three States the crop is late and weedy, and the yield light. Against the great crop of five million bushels grown last year, we cannot expect more than three million bushels this season, so that prices should range from three and one-half to five cents per pound for the new crop against two to three cents for the peanuts grown last year.

Beans Will be Scarce, compared to last year. The white pea bean does not promise a full yield in Vermont or New York. Limas in California will be much less than last year; Ventura county alone has 10,000 acres less and the yield will be reduced.

Tobacco is Booming, especially in the cigar-leaf growing districts of New England, New York and Pennsylvania, where the crop was very promising up to August 15th on a considerably increased area. In the Connecticut and Housatonic valleys conditions have been almost perfect, and, barring heavy or early frosts, a superb crop will have been harvested in that section by Sept. 10th. Prices bid fair to be high, and contracts have already been made (with growers of crops that usually contain from 50 to 75 per cent. of leaf suitable for wrapping cigars) at from 25 to 30 cents per pound for the whole crop through, in the bundle. In Ohio and Wisconsin cigar leaf has been injured by successive dry and wet spells, with intense heat, and the same is true of the heavy leaf grown in those sections. In Tennessee and southward heavy leaf and Burley tobaccos promise a fair crop, contracts for which are already being placed at figures fully as high as last year. Domestic manufactures of tobacco are prosperous, the export demand for heavy leaf is good, imports of wrappers are falling off, and everything points to an era of great prosperity for tobacco growers.

The Wonderful New York Central.—The New York Central & Hudson River Railroad is our road. We don't mean to say we own it, but it's ours to ride on. It is known the world over as "America's Greatest Railroad" — the noted four-track trunk line. Seventeen splendidly equipped passenger trains, north and west bound, roll out daily from its magnificent Grand Central Station, Fourth Avenue and Forty-second street, in the very heart of New York City. It makes connections with all the principal northern and western points of travel, while its Hudson River route to and from Buffalo and Niagara Falls is a marvel for scenic beauty. The fine roadbed insures comfort and ease, its thorough construction making possible the fact that the New York Central trains have beat the world in the record for fast time. The passenger coaches are models, and more than comfortable; in style and finish they everywhere reflect the taste and skill of their builders. As to the parlor and sleeping cars—well, this road appears to have a patent there on everything cosy and attractive and luxurious, the traveler at once sinking into blissful repose by day, and utter oblivion at night as he literally is whirled to a sound, sweet sleep, in a visit to the land of dreams. Add to this the conveniences, common to a vestibuled train, to be found in the buffet, the delightful smoker, the lunch and the more imposing dining tables, etc., and what is there to wish for? Then, if you are landed at the metropolis, there is a street car under the Grand Central station roof, on a side track, waiting to carry you exactly where you wish to go. Take the New York Central for Niagara Falls, and sure, next year, on a trip to Chicago. — *From Daily and Weekly Item, Lynn, Mass.* [*Adv.*

The Murray Harness.—The low priced harness advertised in another column, fills the bill as follows:

COE RIDGE, Ohio, Nov. 17th, 1891.
WILBER H. MURRAY MANUFACTURING CO.,
Cincinnati, O.

DEAR SIRS:—Your No. 4 "Murray" harness arrived O. K. on the 22nd. I am more than pleased. It far exceeds my expectations, being as good, or better, in material and finish as the ones I examined in Cleveland, O., for $26. The neighbors that have seen it wonder how you can supply so good an article for the money. If I can secure you a few orders this winter I shall be only too happy to do so.

Yours Very Respectfully, ED. COLLINS.

THE PEERLESS ATLAS FOR 1892.

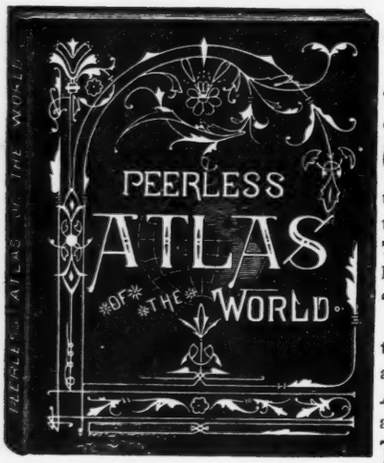
130 PAGES, EACH 14 BY 11 INCHES. OVER 200 LARGE MAPS AND ILLUSTRATIONS.

Presented to anyone sending

2 New Subscribers

to the American Agriculturist at the club rate of $1 per year.

Only $1.75 for the Atlas and the AMERICAN AGRICULTURIST ONE YEAR.



Size, Open, 14 by 22 Inches; Closed, 14 by 11 Inches

It Gives the Population, by the Census of 1890,

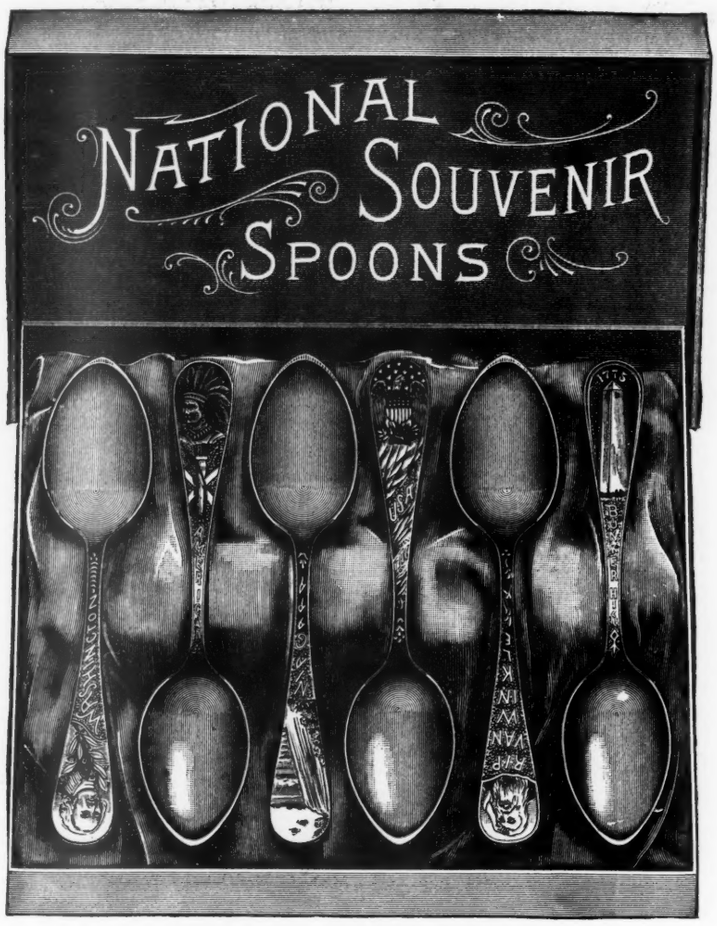
Of each State and Territory, of all counties of the United States, and of American Cities with over 8,000 Inhabitants.

The Peerless Atlas meets the wants of the people more completely than any similar publication ever published. **For the price, it stands "Peerless"** in every sense of the word.

OUR NEW EDITION contains several maps never before published, including new, accurate and timely information, statistical and otherwise, brought down to the latest date. As an atlas and general reference book it is broad and comprehensive, valuable alike to the merchant, the farmer, the professional man, in fact, everybody. **It is equal to any $10 Atlas.** To keep pace with the progress of the age, to understand comprehensively and intelligently the current happenings daily telegraphed from all parts of the earth, you must have at hand the latest edition of the "Peerless Atlas of the World."

LARGE AND MAGNIFICENT ILLUSTRATIONS embellish nearly every page of the descriptive matter, and faithfully depict scenes in almost every part of the world. They are intensely interesting and constitute an art collection which will be viewed with pleasure and admiration for years to come. Among these are included illustrations of 10 of the principal buildings to be erected for the World's Fair at Chicago in 1893.

THE PEERLESS ATLAS HAS AS LARGE AND FINE MAPS AS ARE FOUND IN $5.00 AND $10.00 ATLASES.



This entire set given for 6 yearly subscriptions at the club rate of $1 each, or your choice of any one of the spoons given for one new subscription at the club rate of $1.

The above illustration shows our new set of National Souvenir Tea Spoons containing one each of the following:

1 Washington Spoon,
1 American Spoon,
1 U. S. A. Spoon,
1 Niagara Falls Spoon,
1 Rip Van Winkle Spoon,
1 Bunker Hill Spoon.

Making a set of Souvenir spoons that any American would be proud to own. They are guaranteed to be **triple plate.** Oxidized and **gilt lined bowls,** and will wear for years, and are less in price than anything of the kind has **ever** been offered at before. Each set is mailed in a nice plush lined case.

Price of single spoon mailed 50c, or the complete set in plush case by registered mail for $2.50, or the set of six spoons and the AMERICAN AGRICULTURIST one year for $3, or your choice of any one spoon and the AMERICAN AGRICULTURIST one year for $1.60.

INDIVIDUAL SALT AND PEPPER SET.

Given to any present subscriber sending us 3 new subscribers at the club rate of $1 per year.

New Design in Salt and Pepper Triple Plated Silver Satin Finish with **Gold Lined Salt and Spoon,** in satin lined box. Nothing could be more beautiful or suitable for a gift. Guaranteed to give satisfaction in every instance or money refunded.

Price $1 postpaid.

WITH THE
AMERICAN AGRICULTURIST
One Year $1.75.

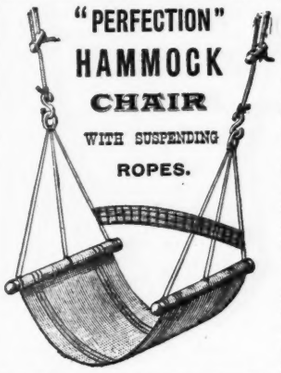
THE

Perfection Hammock Chair.

Complete and in Perfect Readiness for Hanging.

Given for two new subscribers at the club rate of $1 per year.

The excellent features of the Perfection Hammock are so well known that when it is stated that the Perfection Hammock Chair combines all the desirable qualities of the hammock in addition to its own unique and unequaled features, the reader will easily concede that in it genuine perfection has been reached. It is at once a hammock, swing, and chair. It is complete and in perfect readiness for hanging when received by our subscribers. Ropes, hooks and slips are sent with it. It is packed in a very small and compact bundle. It affords very enjoyable recreation and comfort on a hot summer day if hung in a shady spot on a veranda or in the branches of trees.



Price **75 cents,** postpaid.

With the AMERICAN AGRICULTURIST one year, **$1.60**

No. 351. Self-Lighting Pocket-Lamp.

Given to any present subscriber sending us 1 new subscriber at the club rate of $1 per year.

Showing Lamp Open and Being Lighted.

Our cut shows a perfect instantaneous Self-Lighting Lamp of convenient size for the vest pocket and for home uses. It is a perfect light for carrying about the house, and entirely removes the dangerous use of matches. The Self-Lighting Lamp is indispensable to smokers and others, as the danger attending the careless carrying of matches in the pocket has been too frequently illustrated to the reader to require any words on the subject. The fact that the use of half a dozen matches is often necessary in lighting a cigar (and for many other purposes) speaks volumes for this lamp, which, by the turning of a screw, gives a light as long as needed. It is made of brass, highly finished, nickel plated and warranted to work; besides 100 lights in lamp 300 extra lights are included—put up in a handsome lithographed case.

Though equal to lamp retailed for $1, we offer it for only **50 cents,** postpaid.

One thousand additional Lighting Strips sent postpaid for 10 cents. With the AMERICAN AGRICULTURIST one year, **$1.60.**

Address **AMERICAN AGRICULTURIST, 52 and 54 Lafayette Place, New York.**

Contents of This Number.

Animal Ailments....558, 562
Apples for Stock-Food....524
Artesian Wells, Irrigation by....564
Aster, The, A Useful Garden Flower (G. A. Woolson) ....*Illustrated*..537
Basket Items....554, 555
Bean, Castor-Oil, Culture (W. L. Moore)....532
Beet Sugar in California (Richard Gird)....523
Birch Oil, A New Industry (T. B. Holmes) .... 3 *Illustrations*..533
BOYS AND GIRLS:
Why the Locusts Sing in Warm Weather (Agnes Carr Sage)....*Illustrated*..547
The Song of the Cicada....*Illustrated*..547
A Cuban Pilot Boy (Edmund Parker)....547
The Beginnings of Words (Lucy Elliott Keeler)....548
The Family Tool Chest (Prudence Rhodes)....548
Stiefmutterchen (S. Jennie Smith)....548
Our Puzzle Column....548
Camping in the Mountains (James Nelson) *Illustrated*.549
Callas in Summer and Winter (C. H. Allen).*Illustrated*.539
Canna, Mad. Crozy (C. L. Allen)....540
Carriages, Proper Care of (S. Yates)....526
Churning by Machinery....527
Clover, Green Storing in Barns....532
Cold Storage by Artificial Freezing (N. R. Briggs)....523
Composts, Making of, The (S. Henry)....522
Corn Crop, The, Securing (L. D. Snook)....524
Creameries in the South....526
Current Topics....560
Dairy, Capital vs. Brains in the (John Gould)....530
Dorking, White, The (H. S. Babcock)....531
Drill, Rustic, for Iron, A....*Illustrated*..528
Drinking Water, Impure....538
Farming in Foreign Lands....552
Flowers, Early Spring, Getting Ready for (Eben E. Rexford)....537
Flower Pits and Greenhouses (Mrs. L. D. Elder)....538
FROM NEAR AND FAR:
Farming in Alabama....550
California Wheat....550
Northwestern Montana....550
Alfalfa in New Mexico....550
Potatoes and Pork in Michigan....550
Reaping and Threshing in India....550
A Fertilizer for the Pacific Coast....551
A Charming Rural Home in France....*Illustrated*..551
Mexican Coffee....551
Fruit Bleaching (I. H. Fickel)....*Illustrated*..539
Frosts, Untimely, Protection from....525
Fruits, Native, of the Northwest (J. S. Harris)....523
Fruit, To Get Higher Prices for....536
Geraniums, Wintering (J. L. Townshend)....538
Grass, Bermuda (Dick Naylor)....529
Grindstone Frame, Cheap and Durable, A..*Illustrated*..528
Horse Collar, Fitting a....526
Horses, Farm, Care of (Webb Donnell)....524
Horses, General Purpose, The (D. B. Harris)....536
HOUSEHOLD, THE:
Early Home Training (Alice Chittenden)....542
My New Neighbor (Mary Ferres)....542
How to Renovate Wall Paper (Mrs. E. M. Pleasanton) 542
Woman's Pet Virtue (Palmetta Montclair)....542
Darning Case (Lena J. Ringueberg)...2 *Illustrations*..543
How to Utilize Old Carpets (Mrs. E. M. Lucas)....543
Hemstitching....2 *Illustrations*..543
Birds and Grasses (Dora Harvey Vrooman) ....*Illustrated*..543
Ribbon Tidy....*Illustrated*..543
Tape Trimming....*Illustrated*..543
Things That Are Worth Knowing....543
A Kodak Picture Case (Isabel Gordon) 2 *Illustrations* 544
Burlap for Carpet Lining....544
A Pretty French Dress with Puffs (Constance B. White....3 *Illustrations*..544
How to Cut Over Stockings (Emma Mack)....3 *Illustrations*..544
How to Polish a Stove....544
Ribbon Work....*Illustrated*..545
Utilizing a Broken Mirror (J. C. G. Smith) *Illustrated* 545
Curious Things from Orchard and Garden (S. Yates) ....4 *Illustrations*..545
For Cups and Saucers (G. C. Goldsmith)..*Illustrated*..545
Tomatoes in Many Styles....545
Fashion Jottings....546
September Sauces....546
Dishes for Early Fall....546
Italy and Its Peasantry (F. C. Chappell) 2 *Illustrations*..535
Jersey, Champion, The—Signal's Lily Flagg 31035 (L. S. Hardin)....*Illustrated*..527
Lambs, Early, Rearing....530
Manure, Saving (Myron S. Perkins)....534
Matters of Business....563, 565
Library Corner....556
Milking, Cleanliness in....526
Millet Hay, Curing (G. Johns)....534
Mule, Good Qualities of the, The (Henry Stewart)....536
Pansies, California (C. R. Orcutt)....541
Peach, Plum and Cherry Rot, The (Clarence M. Weed) ....5 *Illustrations*..529
Percheron Horse, The....560
Plowhandle Ploddings....524
Prairie, Western, Relief Objects on a (N. A. P. Gentry) ....2 *Illustrations*..525
Ranch, Ideal, in the Southwest, An (R. S. Tarr)....2 *Illustrations*..541
Ramie Industry, The, Progress in....*Illustrated*..528
Science in Farming....553
Sheep, Broad-Tailed, The, of Asia (A. G. Asdikian)....*Frontispiece*..522
Shrubs and Plants, Fall-Blooming (Eben E. Rexford)..526
Spinach....540
Sunflower Oil, Manufacture of....530
Swine, Substantial House for, A (A. H. Sheldon)....2 *Illustrations*..528
The Crops of the Year....570, 572, 573
Trees, Newly-Set, Keep a Record of....534
Vegetable, Neglected, A—Broccoli....530
Weeds, Common, in the Mississippi Valley (L. H. Pammel)....538
Well Water, Pure....537
Wheat, Seeding (John M. Stahl)....532

THE FEARLESS.

The records show this Threshing-machine to be the easiest running and the greatest grain saver of all. Requires only about 1¼ miles travel per hour. For full description, and for the best Straw-preserving Rye-threshers, Clover-hullers, Fanning-mills, Feed-mills, Circular-saw Machines, Land-rollers and Dog-powers, send for **Fearless Catalogue.** For Fodder-cutters, Carriers and Drag-saw Machines, and for information showing "Why Ensilage Pays," send for **Ensilage Catalogue.** Address, HIRAM HARDER, Cobleskill, N. Y.

CALL CURE FOR **Horses & Cattle**

BE SURE AND WORK THE HORSE.

A SURE CURE For Galls, Scratches, Cuts, Sore Shoulders, Corns, Mud Scalds, and all Skin Diseases.
Apply the Remedy as directed, and
BE SURE AND WORK THE HORSE
for the more work the quicker the cure.
For Healing Barbed Wire Cuts it has no equal.
For sale by Dealers, or sample by mail **10c.**
BICKMORE GALL CURE CO.,
Box 120, OLD TOWN, ME.

New York State Fair.

The 52nd Annual New York State Fair,

SYRACUSE, N. Y.

September 8th, 9th, 10th, 12th, 13th, 14th and 15th, 1892.

LARGEST AND FINEST EXHIBITON OF LIVE STOCK EVER SEEN IN THE STATE.

Saturday, September 10th, Governor's Day.

His Excellency, GOVERNOR FLOWER, will attend and address the people.

Tuesday, September 13th, Farmers' and Grangers' Day.

HON. J. H. BRIGHAM, Master of the National Grange, will deliver an address.

Unequaled railroad facilities. The N. Y. C. & H. R. R. R., the West Shore and the D. L. & W. R. R. have depots on the grounds.

Trotting and Running Races Daily. The Grandest Chariot Races in the World Daily.

For further particulars apply to

W. JUDSON SMITH, Secretary,

New York State Agricultural Society, Syracuse, N. Y.

SELF FITTING ELASTIC
TRUSS ON APPROVAL.
ALL KINDS PADS.
BOOK ON RUPTURE FREE.
ARTIFICIAL LIMBS,
Best Leg, Wood or Rubber Foot, $50.
Crutches, Elastic Hosiery, &c.
Catalogue Free. State Particulars.
Geo. R. Fuller, U. S. Govt. Mfr., Rochester, N. Y.

AXION ELASTIC TRUSS
(PATENT ALLOWED.)

RUPTURE CURED.
Worn Night and Day.
Perfect Comfort. Holds the worst rupture with ease. Has a new Pad which can be made larger or smaller by the patient. Sent by mail everywhere. Illustrated catalogue and rules for self-measurement sent securely sealed.
G. V. House Mfg. Co.,
744 Broadway, N. Y. City.
Pat. July 28, 1891.

AMERICAN AGRICULTURIST

—PUBLISHED BY THE—

ORANGE JUDD COMPANY.

A CORPORATION ORGANIZED UNDER THE LAWS OF THE STATE OF NEW YORK.

Main Offices, 52 and 54 Lafayette Place, New York, N. Y.

WESTERN OFFICE, 504 THE ROOKERY, CHICAGO, ILL.

The Western Office is for the accommodation of advertisers and subscribers in that section. All communications should be sent to the Main Office, New York.

Terms of Subscription in the United States and British Provinces.

The American Agriculturist is published monthly and is mailed in time to reach subscribers on or before the first of each month.

Terms.—Single subscriptions $1.50 per year or 75 cents for six months, payable in advance. Clubs of five or more $1.00 per year, or 50 cents for six months.

A FREE copy for every club of five for either term.

Remittances.—Money for subscriptions can be sent by postal note, express or post-office money order, registered letter, check or draft; postage stamps accepted for fractional parts of a dollar.

Expiration of Subscriptions.—The date (usually abbreviated) following each subscriber's name which appears on the magazine or wrapper shows to what time your subscription has been paid. Thus: Jan. '93, means that subscription is paid up to January 1, 1893; Feb. '93, to February 1, 1893, and so on.

Renewals.—Six weeks are required after sending money before the date which shows to what time subscription is paid, and which ans wers for a receipt can be changed. No other receipt is sent unless requested. If at the end of six weeks date is unchanged or any error is noticed subscribers will confer a favor by notifying us.

Discontinuances.—Responsible subscribers will continue to receive this magazine until the publishers are notified by letter to discontinue, when all arrearages must be paid. If you do not wish the magazine continued for another year after your subscription has expired, you should then notify us to discontinue it.

Change of address.—When a change of address is desired both the old and the new address should be given.

New Subscriptions can commence at any time during the year and with any number desired.

Canvassers wanted in every town to solicit subscriptions. Terms sent on application.

Entered at New York Post office as mail matter of second class.

Rates to Foreign Countries.

The yearly subscription of the AMERICAN AGRICULTURIST in shillings and pence to subscribers in foreign countries is as follows:

	s.	d.	U.S. cur.
Africa except Egypt, Liberia and Congo	10	3	$2.46
China	11	3	2.70
Madagascar	10	3	2.46
St. Helena	10	3	2.46
Transvaal	11	3	2.70

Countries in the Universal Postal Union, including Newfoundland, Egypt, Liberia, Congo, Natal, $1.86, and all others not mentioned above, 7s. 9d.; United States currency, $1.86.

In clubs of five or more a discount of 50 cents, or two shillings one penny, is allowed on each subscription.

Remit by post-office money order, payable to AMERICAN AGRICULTURIST, at New York General Post Office, and inclose the money order with your letter to avoid delay and possible loss. Drafts on New York are acceptable in the absence of any other form of remittance.

Foreign Agencies.

The following Agents are authorized to accept subscriptions and advertising orders:

KEGAN PAUL, TRENCH, TRUBNER & CO., 57 Ludgate Hill, London, England.
JOHN IRELAND, Pietermaritzburg, Natal, South Africa.
JOHN H. EVERY, Dunedin, Otago, New Zealand.
WM. MADDOCK, 281 George street, Sydney, New South Wales, South Australia.
WM. HOPKINS, Rockhampton, Queensland, Australia.

Advertising Rates.

Ordinary Pages, $1.00 per line (agate), each insertion.
Last Page, and Third Cover Page, $1.25 per line.
Second Cover Page, $1.50 per line.
Page next to Reading and Last Cover Page, $2.00 per line.
No advertisement taken for less than $3.00 each insertion. Fourteen agate lines make one inch.

Discounts.

On ten (10) lines and upwards, 3 months, five per cent.; 6 months, ten per cent.; 9 months, fifteen per cent.; 12 months, one year, twenty per cent.

On forty (40) lines and upwards, 3 months, ten per cent.; 6 months, fifteen per cent.; 9 months, twenty per cent.; 12 months, one year, twenty-five per cent.

Discount on Space Contracts.—100 lines, ten per cent.; 250 lines, fifteen per cent.; 500 lines, twenty-five per cent; 1,000 lines, thirty per cent.

—o—

Direct all Business Communications pertaining to Subscriptions and Advertising to

AMERICAN AGRICULTURIST,

52 and 54 Lafayette Place, New York.